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FINAL REPORT

OF

THE NATIONAL INCOME COMMITTEE

FEBRUARY 1954

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CONTENTS

		Pages
CHAPTER ONE.	Introduction	1—3
CHAPTER TWO.	The estimates of national income	4—118

I. INCOME ORIGINATING IN DIFFERENT SECTORS

A. Working force

TABLE 1 :	Percentage of working population to total population, 1901-1951	8
TABLE 2 :	Distribution of working force as obtained from the census	9
TABLE 3 :	Distribution of working force obtained from census as percentage of total population	10
TABLE 4 :	Coverage of Y-sample and complete census tabulation of occupation returns for 1941	14
TABLE 5 :	Distribution of working force by industries	23

B. Income from agriculture

TABLE 6 :	The availability of statistics of acreage in India in 1948-49	25
TABLE 7 :	Area, outturn and value of crops	36
TABLE 8 :	Net value of output in agriculture	45

C. Income from animal husbandry

TABLE 9 :	Quantity and value of live-stock products	51
TABLE 10 :	Net value of output in animal husbandry	51

D. Income from forestry

TABLE 11 :	Forest area according to the Agricultural Statistics of India and the Forest Department statistics : Average for 1948-49 and 1949-50	55
TABLE 12 :	Outturn of major forest products	56
TABLE 13 :	Net value of output in forestry	57

E. Income from fishery

TABLE 14 :	Net value of output in fishery	59

F. Income from mining

TABLE 15 :	Net value of output in mining	62

G. Income from factory establishments

TABLE 16 :	Value added by manufacturing industries	66
TABLE 17 :	Net value of output of factory establishments	67

H. Income from small enterprises

TABLE 18 :	Income from small enterprises	71
TABLE 19 :	Value of output per worker and percentage cost	73

Pages

I. Income from banks and insurance

TABLE 20 : Income from banks 75
TABLE 21 : Imputed deduction for banking services 75
TABLE 22 : Deduction for insurance premiums 76
TABLE 23 : Contribution to national income from banks and insurance . . . 77

J. Income from 'other commerce and transport' sector

TABLE 24 : Income from 'other commerce and transport' sector—income approach 82
TABLE 25 : Income from 'other commerce and transport' sector—product approach 83

K. Income from professions and liberal arts and domestic service.

TABLE 26 : Income from professions and liberal arts and domestic service . . 91

L. Income originating in public authorities sector

M. Income from house property

TABLE 27 : Income from house property 101

N. Balance of payments and net income from abroad

II. AGGREGATION OF SECTOR ESTIMATES : NATIONAL TABLES

TABLE 28 : National Income of the Indian Union by industrial origin . . . 106
TABLE 29 : Net domestic product of the Indian Union by character of enterprise . 107
TABLE 30 : Net output per engaged person in the Indian Union 108
TABLE 31 : Share of Government in domestic product and expenditure in the Indian Union 109
TABLE 32 : National economy and the rest of the world 110
TABLE 33 : Relationship between the national income and the other main aggregates of income and product for the Indian Union 110
TABLE 34 : Current account of public authorities : administration 111
TABLE 35 : Current account of public authorities : enterprises 112
TABLE 36 : Capital account of public authorities : administration and enterprises combined 112
TABLE 37 : Expenditure of public authorities 113
TABLE 38 : India's balance of international transactions on current account . . 115
TABLE 39 : India's balance of international transactions on capital account . . 115

CHAPTER THREE. Recommendations on the improvement of data 119—138

CHAPTER FOUR. Recommendations on institutional set up for continued work in national income . . . 139—141

APPENDIX ONE. Comparison of net national output at constant prices 142—144

TABLE A1. 1 : Variation in real product in the Indian Union (base 1948-49) . 143
TABLE A1. 2 : Comparison of movement of net national output at current and constant prices 144

APPENDIX TWO. Error of the estimates 145-146

TABLE A2. 1.—Sector margins of error : 1948-49 146

APPENDIX THREE. Comparison of the present estimates for 1948-49 with the estimates given in the First Report . . . 147—14

TABLE A3. 1 : National income by industrial origin for 1948-49 as given in the First Report and in the Final Report . . . . 147—148

APPENDIX FOUR. Bibliography . . . 149—170

Alphabetical list of sources used . . . . . 149—168

A sectorwise classification of the serial numbers in the alphabetical list . . . . . . 169—170

GLOSSARY OF ABBREVIATIONS 171

GLOSSARY OF INDIAN WORDS USED 172

AREA AND POPULATION OF THE INDIAN UNION 173

FINAL REPORT OF
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FEBRUARY 1954

CHAPTER ONE

INTRODUCTION

1.1. The National Income Committee was appointed under the Government of India Resolution No. 15(33)-P/49 dated the 4th August, 1949, extracts from which are given below:—

"The Government of India have been giving consideration for some time to the inadequacy of the factual data available for the formulation of economic policies. One important gap is the absence of authoritative estimates of the national income and its various components. The Government of India have accordingly decided to set up a committee to advise how best this gap could be filled up. The terms of reference of the Committee are to prepare a report on the National Income and related estimates, to suggest measures for improving the quality of the available data and for the collection of further essential statistics and to recommend ways and means of promoting research in the field of national income. The Committee will also guide the National Income Unit of the Government of India to compile authoritative estimates of the national income."

2. "The Committee will be constituted as follows:—

Chairman:

Professor P. C. Mahalanobis, F.R.S., Indian Statistical Institute, Calcutta.

Members:

Professor D. R. Gadgil, M.Litt., Gokhale Institute of Politics and Economics, Poona.

Professor V. K. R. V. Rao, Ph.D., D.Litt., Delhi School of Economics, University of Delhi."

Arrangements were made to secure the advisory help of Professor Simon Kuznets, Ph.D., University of Pennsylvania and of the National Bureau of Economic Research, New York; Mr. J. R. N. Stone, C.B.E., Department of

Applied Economics, University of Cambridge; and Dr. J. B. D. Derksen, Ph.D., National Accounts Branch, United Nations Statistical Office, New York, who came to India in December 1951 and attended 17 meetings of the Committee between 26 December, 1950 and 23 January, 1951.

The National Income Unit (NIU)* was formed under the Government Order No. 29(G) in the Memorandum No. F.8(23)-Est.1/49, dated the 30th July, 1949, as an attached office in the Ministry of Finance.

1.2. The *First Report of the National Income Committee* was signed on 15 April, 1951. In the following paragraphs an account is given of the subsequent activities of the Committee.

1.3. The estimates for 1949-50 were prepared by the NIU and were circulated to the members towards the middle of August 1951. No regular meeting of the Committee took place till 16 November, 1951, but members maintained touch with the Unit and gave instructions on preparation of the estimates. Professor D. R. Gadgil visited the Unit on a few occasions and there were a number of meetings between Dr. V. K. R. V. Rao and the Secretary. The Chairman also looked after the detailed work of the Unit in certain directions.

1.4. Four meetings of the National Income Committee (NIC) were held between 16 and 18 November 1951, and two meetings on 21 and 22 February 1952, in New Delhi, in which the form and contents of the report and the estimates were considered. In this session a rough outline of the final report was got ready by the members, and the NIU was asked to circulate a draft of the report on the agreed outline. However, at its 41st meeting held on 10 October, 1952 which was attended by the Finance Minister, it was decided at his suggestion that the Committee should examine the National Sample Survey (NSS) from the standpoint of national income estimation. The Committee subsequently met on a number of occasions in 1953 and early 1954. The Final Report was signed in the 57th Meeting of the Committee held on 14 February, 1954.

1.5. The report consists of 4 chapters and 4 appendices. Chapter 1 is introductory. Chapter 2 presents the estimates of national income for 1950-51, 1949-50 and 1948-49 in different economically useful forms with a description of the method of estimation. Chapter 3 gives a review of the gaps in existing statistics and makes recommendations for the improvement of the quality of the available data and for the collection of essential statistics required for estimating national income. Chapter 4 deals with ways and means of improving national income estimates and of promoting research in this field. In the First Report various general questions on national income and related estimates had been discussed. The First and the Final Report thus cover all the terms of reference of the Committee.

* For abbreviations used see glossary in the end.

1.6. Appendix 1 gives estimates for 1950-51, 1949-50 and 1948-49 all expressed at 1948-49 prices and enables the reader to get some broad idea of the variation in real product during the period. Appendix 2 gives an account of the error margins involved in the estimates presented. Appendix 3 presents the estimates for 1948-49 as given in our First Report side by side with the revised estimates for the same year as given in this report. Appendix 4 gives a bibliographical list of the sources of data used.

1.7. It would be fitting to close this chapter with an acknowledgment of help received in the work of the Committee. A large number of institutions (both Government and private) helped materially in the work of the Committee. Help was also received from a number of research workers in the field in their individual capacity. The Committee's thanks are also due to the foreign advisers Professor Kuznets, Mr. Stone and Dr. Derksen.

1.8. Lastly, we express our gratitude for the help we received from the Ministry of Finance. Both Dr. John Mathai, who was Finance Minister at the time of the inception of the Committee, and Shri Chintaman D. Deshmukh, the present Finance Minister took an active interest in our work and were present at some of our meetings. Shri Pares Chandra Bhattacharyya, Joint Secretary, Ministry of Finance*, helped in our work in all possible ways. The National Income Unit under the leadership of Shri Moni Mohan Mukherjee, the Secretary of our Committee, prepared the estimates and performed the secretariat work with initiative and competence.

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* Now, Financial Commissioner, Railwaly Board

Chapter Two

THE ESTIMATES OF NATIONAL INCOME

I. Income originating in different sectors

2.1. In this chapter, we set out estimates of the various components of the national income for the three years, 1950-51, 1949-50 and 1948-49. The figures for 1948-49 have been set out afresh, as they have been revised and made comparable with the figures for 1949-50 and 1950-51. The estimates for 1948-49 as given in our First Report and as given in this report are presented side by side in appendix 3.

2.2. While we have thought it proper to drop the table on national accounts presented in the First Report, it remains the unifying principle of the tables presented. The reason for dropping the accounts is that we have not yet been able to prepare good enough estimates of the four items which were represented by symbols in that table. The accounting table, in fact, brings together the concepts which we want to measure. We have succeeded in measuring most of the flows given in the table, but some important flows yet remain to be measured. It is hoped that these will also be measured in the near future. We have not used a more elaborate accounting framework because this will involve large number of flows of which statistical estimates are not likely to be available in the near future.

2.3. To build the conceptual framework we start with a basic concept of production which can be described as provision of goods and services, and the national product is regarded as the totality of production free of duplication. It is well known that this can be obtained in three ways. The first is to sum the value of the gross output (sales plus self consumption plus increase in stocks) of all producers and to deduct from this total the purchases of these producers from other producers, *i.e.*, the value of intermediate products, and the depreciation of equipment used up in the process of production. A net figure of this kind can be obtained for each producer separately and represents the value added by him to the value of the intermediate products with which he starts and hence his contribution to the total value of unduplicated production. Looked at from a different point of view, this value added represents the wages, profits and other forms of income that accrue in productive activity, and hence the same total can be obtained by summing up the various incomes paid and accrued. A third alternative is to seggregate all final products available

for consumption or for investment and to add the corresponding values, leading again to the same total. The last approach, however, will not be considered in what follows. The first two approaches will respectively be described as the product and the income approach.

2.4. In the set of tables presented by us the estimates have been derived in part by the product approach and in part by the income approach. The method followed by V. K. R. V. Rao in his estimate of the national income of India for 1931-32 is similar, except that our estimates have perhaps a smaller measure of inaccuracy than his, mainly because of the availability to us of more data. Nevertheless, it should be possible to compare these estimates, after making adjustments, of course, for territorial changes due to partition and for price changes.

2.5. The estimates presented by us are, generally, based on the regular official statistics, both Central and State. We have also made use of various unpublished material available in the ministries and States. But except under unavoidable circumstances, we have not collected fresh statistical material for preparing our estimates. The level of accuracy and comprehensiveness of our estimates is, thus, closely linked with the corresponding level of official statistics.

2.6. It will be convenient to discuss our estimates under the following heads:—

A. working force
B. agriculture
C. animal husbandry
D. forestry
E. fishery
F. mining
G. factory establishments
H. small enterprises
I. organised banking and insurance
J. other commerce and transport
K. professions and liberal arts and domestic service
L. public authorities
M. house property
N. balance of payments and net income from abroad.

After discussing the estimates of net output in each sector, we shall pass on to aggregation and shall present the tables bringing out the relations between several aggregates.

A. Working force

2.7. In this section, we discuss the methods adopted for compiling our estimates of the working force in India. The basic data in connection with income estimation relate to the size of the economically active population in the country, and the distribution of this working force into occupational classes. This enables not only a proper accounting of the total commodity production available for consumption and investment but also makes possible the estimation of the value of services for which no quantitative measure of output is possible. It also makes possible an analysis of the productivity per person in different branches of economic activity, the distribution of income by various classes, etc. The data that may be pressed into service for such analysis are of two types: (i) periodic population censuses, furnishing information on the total size of population as also its distribution with reference to the number of persons in different branches of economic activity, and (ii) other economic statistics of a fairly regular nature dealing with the employment of people in different industries and occupations, and other subsidiary records giving information regarding manpower utilisation.

2.8. *Census occupation data*: Decennial censuses are available from 1881 onwards. (For 1872, a partial census, giving the population of different British provinces for different years, is also available). The geographical coverage of the censuses is not strictly comparable, but adjustments, or at any rate sectional or provincial comparisons are possible with a fair degree of reliability from 1901. Estimation of the occupational distribution of the population, however, presents both conceptual and practical difficulties. Conceptual difficulties centre around the definition of 'gainfully occupied' population and also of 'occupation'. As the census report for 1901 states, "It is often very difficult to say at what particular point the line is to be drawn. Is a woman to be shown as a worker because she husks the rice eaten by the family or weaves clothes for their use or is a child to be so regarded because he occasionally looks after his father's cattle?" This difficulty pertains especially to agriculture, where the household economy makes for such difficulties in definition. Similar difficulties arise in most sectors due to the existing social system. The census report for 1931 points to such a case. "...........It is difficult to see how........... working dependents returned under...........Police can represent persons whose occupation is the preservation of the public peace...........police are to be found whose office is hereditary...........and is automatically filled by relatives...........when (he) is indisposed...........For these reasons the figures cannot claim to be more than an approximation to the truth". The social system similarly creates difficulties in the enumeration of women workers, as many people feel shy in recording their wives as workers for reason of prestige.

2.9. Another difficulty in connection with the analysis of occupation data is concerned with the definition of 'dependents'. The concept of

dependents was introduced in 1901 but no distinction was made between working dependents and non-working dependents so that the occupation returns show only the principal and the subsidiary occupations. Thus, until 1921, 'working dependents' were also treated as 'workers' the only distinction available being between 'workers' and 'non-working dependents'. The term 'working dependent' which was introduced in 1931, stood for one who "assisted in the work of the family and contributed to its support without actually earning wages". His economic status cannot, however, be compared to that of the 'partly dependent' of 1941 or 'earning dependent' of 1951. The 'partly dependent' was a person whose income from occupations or means of living was too insufficient for him to make both ends meet, so that he had to depend on some self-supporting person of his family for support. This definition compares very closely to 1951 'earning dependent' who is basically regarded as economically semi-active and secures a regular income (in cash or in kind), no matter however small, but not sufficient to support him.

2.10. Not a little difficulty attaches to the interpretation and the analysis of census occupation data because of the changing definition of 'occupation' and the different interpretations given to this word in different periods and even during the same period according as the enumerators thought fit. Until 1941, data on occupation related to gainfully occupied persons. The 1951 census seeks to ascertain, the 'economic status' and 'means of livelihood' of every person enumerated. Though these terms are clearly defined, in practice there have been ambiguities in interpretation. India's social system, the joint family system which provides for the unemployed people, social prejudice against returning non-working people as not gainfully occupied, the genuine practical difficulty of classifying people temporarily unemployed in one or other of the occupation categories, as also the practical difficulty of classifying casual labourers, occasional farm hands and dependents who help other members of the family in more than one calling, all these present difficulties in making comparison of occupation returns over a long period. The accuracy and homogeneity of the returns are thus greatly affected, and make it difficult to use census data as even approximate indications of historical trends.

2.11. Table 1 presented below gives the percentage of working population to the total population over 1901—1951. As would be obvious from a careful perusal of the table, there are wide fluctuations in the working force in the same State over decades, as also marked differences between the States in the same year. A comparison of these percentages for class A States over 1901—1951 indicates the danger of attaching too much reliability to the past figures of occupation classification. It is possible that for India as a whole the errors may cancel out, but they make nonsense of any projection or long period comparison of the changes in the occupation pattern of the country.

TABLE 1 : PERCENTAGE OF WORKING POPULATION[1] TO TOTAL POPULATION, 1901-1951

States	1901	1911	1921	1931	1941	1951
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Madhya Pradesh	67	59	59	53	48	56
Bombay	53	47	45	39	47	43
West Bengal [2]	40	36	35	29	36	35
Assam	50	46	46	45	38	43
Bihar [3]	}				38	36
Orissa [3]		48	49	41	43	38
Madras	53	51	48	55	36	31
Punjab [2]	38	39	35	35	42	39
Uttar Pradesh	49	51	53	49	34	42

[1] Working population for 1901-1921 consists of workers only but latter on, working dependents (a new classification in 1931 census) were shown separately ; these have been included with the workers.

[2] Bengal and Punjab in 1941 and 1951 correspond to the partitioned area coming in the Indian Union but for previous years relate to the whole of Bengal and Punjab. For 1901, Punjab includes North West Frontier Province as well.

[3] Bihar and Orissa have been taken together for all the census years except 1941 and 1951.

2.12. If attention is concentrated on all India totals and not on statewise distribution of occupation, and if figures of a more recent period are adopted for the purposes of comparison, the results would be more consistent and plausible. Due to the changed tabulation scheme of 1951 census, an attempt has been made to build up an overall estimate of working force of the Indian Union for 1941 on the basis of Y-sample tables* and other State tables relating to the same year, the figures having been appropriately adjusted for the changed tabulation scheme for strict comparison with 1951 figures. Details of the comparison of livelihood classes of the 1951 census with the occupational groups of 1941 and 1931 censuses are given in the subsidiary table 5.6 in the 1951 Census Report for Uttar Pradesh (Part 1-B). This has been used by us with a few minor changes. The results are furnished in tables 2 and 3.

2.13. In table 2 presented below, we have given the occupational distribution of the working force for the Indian Union, inclusive of Jammu and Kashmir, for the years 1941 and 1951 according to the Indian Census Economic Classification (ICEC) Scheme. This, as referred to earlier, involved recasting the 1941 figures in the 1951 pattern. Further, adjustments had to be made in respect of the 1941 Census sub-class XI, *i.e.*, 'insufficiently described occupations' reference to which has been made in a subsequent paragraph. Tables 2 and 3 are given below.

* Occupation tables based on a 2 p. c. sample of census slips.

TABLE 2: DISTRIBUTION OF WORKING FORCE AS OBTAINED FROM THE CENSUS

(figures in lakhs)

livelihood classes	1951					1941				
	self-supporting persons			earning dependents	total working force	self-supporting persons			earning dependents	total working force
	males	females	total			males	females	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
I—IV* agricultural classes : total	593	127	720	283	1003	554	136	690	171	861
V production other than cultivation . . .	105	18	123	44	167	107	24	131	33	164
VI commerce . . .	54	6	60	13	73	51	9	60	9	69
VII transport . . .	17	..	17	3	20	14	..	14	2	16
VIII other services and miscellaneous sources . .	108	20	128	41	169	76	23	99	21	120
V—VIII non-agricultural classes : total	284	44	328	101	429	248	56	304	65	369
grand total . .	877	171	1048	384	1432	802	192	994	236	1230

*Roman numerals are the class numbers used in the 1951 census.

TABLE 3: DISTRIBUTION OF WORKING FORCE OBTAINED FROM CENSUS AS PERCENTAGE OF TOTAL POPULATION

livelihood classes	1951					1941				
	self-supporting persons			earning dependents	total working force	self-supporting persons			earning dependents	total working force
	males	females	total			males	females	total		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
I—IV* agricultural classes : total	16.4	3.5	19.9	7.8	27.7	17.4	4.2	21.6	5.4	27.0
V production other than cultivation . . .	2.9	0.5	3.4	1.2	4.6	3.3	0.8	4.1	1.0	5.1
VI commerce . . .	1.5	0.2	1.7	0.3	2.0	1.6	0.3	1.9	0.3	2.2
VII transport . . .	0.5	..	0.5	0.1	0.6	0.4	..	0.4	0.1	0.5
VIII other services and miscellaneous sources . .	3.0	0.5	3.5	1.2	4.7	2.4	0.7	3.1	0.7	3.8
V—VIII non-agricultural classes : total . . .	7.9	1.2	9.1	2.8	11.9	7.7	1.8	9.5	2.1	11.6
grand total . .	24.3	4.7	29.0	10.6	39.6	25.1	6.0	31.1	7.5	38.6

*Roman numerals are the class numbers used in the 1951 census.

2.14. From table 2 it may be noted that even though there has been appreciable rise in the total working force in all the livelihood classes, the number of self-supporting females shows a fall everywhere. This fall is, however, offset by a steeper rise in the number of earning dependents. It will be seen from the above that the proportion of earning dependents to self-supporting males has considerably gone up. Table 3 is derived from table 2 expressing the working force distribution as percentages of the total population (361·2 and 318·8 million persons in 1951 and 1941 respectively).

2.15. Apart from the limitations outlined above regarding long period comparisons, the census data also present other conceptual problems of analysis and interpretation. From 1911 till 1941 all occupations were classified according to a scheme which comprised four main classes, *viz.*, (i) production of raw materials, (ii) preparation and supply of material substances, (iii) public administration, and (iv) miscellaneous, and twelve sub-classes. Each sub-class consisted of a number of orders which numbered 55 in all. These orders were further split up into a number of sub-orders which in turn were further divided into various groups, the total number of such groups being 195 and 236 in 1931 and 1941 respectively. Information in 1931 and 1941 was presented under three heads: principal occupation, subsidiary occupation and occupation of working dependents.

2.16. In the 1951 census, the ICEC Scheme was introduced, according to which all occupations are divided into eight livelihood classes as given below:—

I. cultivation of land wholly or mainly owned;

II. cultivation of land wholly or mainly un-owned;

III. cultivating labourers;

IV. non-cultivating owners of land and agricultural rent receivers;

V. production (other than cultivation);

VI. commerce;

VII. transport;

VIII. other services and miscellaneous sources.

The first four classes belong to the category of agricultural classes and the rest to the category of non-agricultural classes. Each of the eight livelihood classes are divided into three sub-classes, with reference to their economic status, *viz.*, (i) self-supporting persons, (ii) non-earning dependents and (iii) earning dependents. Barring a few exceptions, every self-supporting person is economically active and the means of livelihood which provides him the largest income is his principal means of livelihood, the second in order of size being his secondary means of livelihood. The data relating to such persons are given in Economic Table I of the Census.

Further, detailed breakdown of self-supporting persons in all non-agricultural activities, generally referred to as 'industries' and 'services' in the ICEC Scheme is given in Economic Table III by 10 divisions and 88 sub-divisions. It is understood that further detailed breakdown may, at a later date, be available by groups, which number 211 in all. As for non-earning dependents, they are economically passive and therefore, fall outside the working force. "All earning dependents are economically semi-active only. Though they contribute to the carrying on of economic activities, the magnitude of their individual contribution is deemed to be too small to justify their description as economically active."* Their contribution is, however, taken into cognizance in Economic Table II which classifies, besides these earning dependents, all self-supporting persons, who have one or more secondary means of livelihood, by eight livelihood classes. The different aggregates based on the figures for self-supporting persons (S.S.) and earning dependents (E.D.) which could be used for national income estimation are as follows:—

(a) S.S.+E.D.+self-supporting persons with secondary means of livelihood already included in S.S. = all incomes;

(b) S.S.+E.D.=working force; and

(c) S.S. = self-supporting persons.

From the point of view of national income estimation, account may be taken of all three. The problem of an equivalence scale, or the problem of attaching weights or importance to earning dependents or to subsidiary occupations in relation to self-supporting persons, becomes a highly complicated one and its solution involves assumptions which may not be justified. It may be seen that subsidiary occupations are most important in agriculture and cottage industries. It is also possible that an earning dependent may be earning less than the self-supporting person in any occupation. However, the social system of the country according to notions in which an aged and infirm father is regarded as a self-supporting person while his grown-up sons are treated as earning dependents, makes it difficult to treat earning dependents in any way different from the self-supporting persons. The essential problem in this connection relates to the possible difference in the productivity of these, and also to the degree of strictness with which the census enumerators enforce the instructions for filling up the questionnaires†.

2.17. A minor problem connected with national income estimation consists of adjustment of some of the livelihood classes as outlined in table 2 above. For this, analysis by census sub-divisions and sometimes even by groups is necessary as a few activities are incorporated in classes other than those in which they should be classified for national income purposes. Thus, for instance, people enumerated in census division

*Quoted from the ICEC scheme.

†In this respect, our treatment differs markedly from that of V.K.R.V. Rao who used an equivalence scale of 1 principal worker=4 working dependents=3 subsidiary workers.

'primary industries not elsewhere specified' such as stock raising, plantations, forestry, etc., have to be removed from the sub-class 'industry' and transferred to the sub-classes 'exploitation of animals and vegetation' where they belong. The 1951 census does not give detailed breakdown of the earning dependents by respective sub-divisions and groups. Therefore, assumptions become necessary to distribute the earning dependents by the sectors given in our industrial origin table. The only satisfactory solution appears to be the assumption that the distribution of earning dependents within each livelihood class is similar to that of self-supporting persons of the same class as available in Economic Table III. Further, the Economic Table II does not contain details of about a million earning dependents in Hyderabad State who have escaped cross classification for this table. Thus the total number of earning dependents according to Economic Tables I and II differ by about a million. Necessary adjustments have, however, been made on a *prorata* basis.

2.18. The 1951 census provides us with a variety of additional data very important for an analytical study of various economic problems. The ICEC Scheme has established a comprehensive economic classification of the population as a whole and not merely of persons who are gainfully occupied. Further, it throws light on the economic status of all economically active self-supporting persons who have been classified under the categories 'employer', 'employee', and 'independent worker'. An 'employer' is defined as a person who has necessarily to employ other persons in order to carry on the business from which he secures his livelihood. Thus anybody employing a servant for domestic use, etc., cannot be called an employer merely on that account. Similarly by an 'independent worker' is meant a person who is not employed by any one else and who does not also employ anybody else for earning his livelihood. This information has been very advantageously used in the income estimation in the 'other commerce and transport' sector of our present estimates. Another feature about the 1951 census is that it gives us the urban-rural breakdown of the occupation returns*. Further an attempt has also been made to prepare livelihood classes by age groups on the basis of a 10 p.c. sample of census slips.

2.19. The 1951 census returns being available we have used both the 1941 and the 1951 data for the derivation of the working force in 1950-51. 1949-50 and 1948-49. As regards the year 1941, the 2 p.c. sample tabulation of occupation data in respect of all class A States and complete census tabulation results in respect of some of the former princely states and a few of the class C States are available for purposes of occupation analysis of the working force in the country. Table 4 given below indicates the proximate coverage of the two sets of data for 1941.

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*The 1931 census returns furnished occupation figures only for some towns and these were used by V.K.R.V. Rao to frame an all-India estimate of urban-rural breakdown of the occupational tables for that year.

TABLE 4: COVERAGE OF Y-SAMPLE AND COMPLETE CENSUS TABULATION OF OCCUPATION RETURNS FOR 1941

(figures in thousands)

States (1)	population covered by Y-sample (2)	1941 population (3)	population not covered by Y-sample (4)
1. Madras	49,841	49,841	..
2. Bombay	21,431	24,977	3,546
3. West Bengal	16,132	21,196	5,064
4. Uttar Pradesh	55,895	56,346	451
5. Punjab	12,675	12,697	22
6. Bihar	36,546	36,546	..
7. Madhya Pradesh	19,648	19,648	..
8. Orissa	12,145	13,768	1,623
9. Assam	7,182	7,472	290
10. Baroda	2,855	2,855	..
11. Assam States	726	1,880	1,154
total	235,076	247,226	12,150

States	population covered by complete tablulation	1941 population	population not covered by complete tabulation
12. Ajmer	584	584	..
13. Andaman and Nicobar Islands	..	34	34
14. Bilaspur	..	110	110
15. Coorg	..	169	169
16. Cutch	..	501	501
17. Delhi	918	918	..
18. Himachal Pradesh	..	935	935
19. Panth Piploda	..	5	5
20. Madhya Bharat	4,006	7,143	3,137
21. PEPSU	..	3,424	3,424
22. Vindhya Pradesh	..	3,565	3,565
23. Bhopal	..	785	785
24. Travancore-Cochin	7,493	7,493	..
25. Hyderabad	16,339	16,339	..
26. Junagadh	..	671	671
27. Kashmir	4,022	4,022	..
28. Mysore	7,329	7,329	..
29. Kohlapur	..	1,092	1,092
30. Sikkim	..	122	122
31. Saurashtra	..	3,343	3,343
32. Jodhpur	2,556	2,556	..
33. Rajasthan	4,264	4,264	..
34. Bikaner	1,293	1,293	..
35. Jaipur	3,041	3,041	..
36. Jaisalmer	93	93	..
37. Matsya	1,838	1,838	..
38. Bombay (Abu state)*	4	..	(—4)
total	53,780	71,669	17,889
grand total	288,856	318,895(a)	30,039

*1941 population of Abu state has been included in Bombay.
(a) Source : Census Paper No. 2, 1949.

2.20. Detailed notes in respect of the working force estimates based on the 1941 occupation data as presented in the First Report were given in the appendix to that report. The procedure indicated in the notes has, in general, been retained with the difference that sub-class XI, *i.e.*, insufficiently described occupations has now been reallocated in a different way. The first three groups of this sub-class, *viz.*, (a) manufacturers, businessmen and contractors otherwise unspecified, (b) cashiers, accountants, book-keepers, clerks and other employees in shops, and (c) mechanics otherwise unspecified, have now been reallocated among the sub-class III (industry), IV (transport) and V (trade) on *pro rata* basis, whereas the last two groups, *viz.*, (d) labourers and workmen otherwise unspecified and (e) means of livelihood exists, but is completely unspecified, have been taken over to sub-class I (exploitation of animals and vegetation). There has been no other change in the procedure.

2.21. As regards 1951, Economic Tables I, II and III do not include the population of Jammu and Kashmir as also another 0·2 million persons, whose enumeration records were destroyed by fire in the census tabulation office at Jullunder. For our calculation we have appropriately raised the given working force for the additional population, retaining the original percentage distribution. The final figures have been presented in table 2 earlier. For derivation of the total working force for 1950-51, 1949-50 and 1948-49, the method of logarithmic interpolation has been adopted for each livelihood class. These totals have then, with the aid of 1951 Economic Table III, been reclassified to make them exactly comparable with figures given in Table 1 of the First Report. This is, the figures are given broadly by the 1941 census sub-classes.

2.22. The exact method adopted for arriving at the distribution of the working force is given in the Appendix to the First Report, our modifications of the estimational procedure used therein béing given below. We also briefly discuss here some data giving sectional manpower utilisation statistics, which have been considered and sometimes used for adjustment purposes.

2.23. Total population in the Indian Union, based on 1951 census, was made available by the Census Commissioner (now published in the *Census Paper No.* 1). Population for the entire Indian Union (excluding Jammu and Kashmir and part B tribal areas of Assam) in March 1951 was 356·829 millions. To this has been added 4·41 millions for Jammu and Kashmir. Part B tribal areas of Assam (not included in any former census) are not included in present estimation. Total estimated population in 1951 thus work out at 361:239 millions, the corresponding estimate of population in 1941 being 318·788 million persons. Population for 1950-51, 1949-50 and 1948-49 have been estimated for each of the constituent States by logarithmic interpolation, and the totals in the three years work out at 359·334, 354·820 and 350·379 million persons respectively.

2.24. *Statistics of factory employment*: Employment statistics for factory workers are collected by the Labour Bureau (LB), through zonal Chief Inspectors of Factories (CIF), under the Factories Act and the Payment of Wages Act. Until 1948, the Factories Act (1934) enforced such collection of statistics, as one among many other obligations, for all factories employing 20 or more workers and using power (under section 2j of the Factories Act). The Act also empowered State Governments to *notify* any factory employing between 10 and 20 workers and using power and also any factory employing 20 or more workers but not using power. These were variously known as factories coming under section 5(1) or 79(A). Statistics of 2j factories are reasonably complete, covering more than 90 p.c. of the factories falling within the purview of the Act, although the coverage was not so complete in the class B States, where the Factories Act either did not apply or did not apply in the same form until recently. For the 5(1) or 79(A) type of factories, the coverage was far from satisfactory, as the notification of such factories was left to the discretion of the State authorities. The possibility of evasion of the Act by border-line cases and also by a nominal division of ownership of any factory between two or more partners, and putting less than 20 workers in different parts of the factory and designating them as separate units or factories may also lead to underestimation of factory employment. The 1948 Factories Act covers all factories employing 10 or more persons and using power, or those employing 20 or more workers but not using power. These are covered by sections 2m(i) and 2m(ii) of the Act respectively and may, therefore, be thus designated. Further, the Act includes all persons working in an establishment where the process of manufacturing is being carried on, and would thus include clerical and other staff on the factory premises* on roll. Independent estimates are available of average absenteeism, by major industry groups, and the actual number of labourers may thus be roughly estimated by adjusting the employment statistics for absenteeism. Statistics of employment (as defined above, unadjusted for absenteeism) and absenteeism are given in the annual *Indian Labour Year Book* (ILYb) and monthly *Indian Labour Gazette* (ILG) both published by the LB.

2.25. Apart from the LB, employment statistics for factory labour are also collected by the Directorate of Industrial Statistics (DIS), under the Industrial Statistics Act of 1942, as part of their annual *Census of Manufactures* (CM). The CM so far covers only 29 (major) groups of industries out of a total of 63 groups into which all industries have been classified for this purpose, and statistics are available both for the number of 'workers' and for the number of 'persons other than workers' for each of the 29 industries covered by the CM. The definition of 'employment' again is the same as that for statistics collected for the LB by the zonal

* There is some confusion about the actual implementation of this clause, and it is not quite clear whether returns uniformly include such clerical staff.

CIFs, namely, the average number of people actually in attendance in the factories. The coverage of the CM extends (so far) to all 2j factories.

2.26. In certain cases, statistics of factory employment as available from the above two sources appear to be at variance with each other. But such observations can only be approximate, because, a strict comparison between the two is not possible owing to the different classification schemes for industries adopted by them. Estimates of the factory labour force are also available from the Sample Survey of Manufacturing Industries (SSMI) as conducted by the DIS for 1949 and 1950. The SSMI covers all the 63 groups of industries (barring two industries ordnance—and railway workshops—for which no survey was made), and covers a number of States outside the scope of the CM. Next, unlike in the CM, the SSMI gives a blown up estimate for the entire population.

2.27. For break-up of occupied persons in sub-class III between small enterprises and factory establishments, figures of average attendance in factories given by the SSMI have been utilised. This procedure is necessary because the estimate of net output of factories is also taken from the same source. Hence, the use of LB data on factory attendance is rendered unnecessary. The exact estimational procedure followed is described below. Figures for 1949 and 1950 as given in the SSMI have been taken to apply respectively for 1949-50 and 1950-51 after adjustment for absenteeism*. This adjustment amounts to an inflation of the figure of attendance by the absenteeism ratio in order to get an estimate of the number of persons on roll—a figure comparable with the census data of occupied workers. The working force in small enterprises has been derived by substraction of the factory employment figures (as obtained above) from the total working force in sub-class III. For 1948-49, in the absence of comparable factory employment figures, the ratio of factory employment to total number of gainfully occupied persons in sub-class III for 1949-50, has been used for deriving factory employment in 1948-49, employment in small enterprises being obtained as a residual.

2.28. Persons engaged in 'construction and maintenance of buildings' have, according to 1951 census classification, been returned under subdivision 5:1, which might also include persons who draw their income from government construction activity, without being strictly in the employment of government, such as contractor's labour, etc. It is necessary, therefore, to regulate such persons from the 'industry' sector and show them under public administration. A rough estimate of such persons from government accounts shows their magnitude to be about 10 p.c. of the total number in the census sub-division 5.1. We have, therefore, taken this 10 p.c. of the total to public administration sector and the rest are included in the industry sector. Similar procedure applies to the

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*Figures of absenteeism have been taken generally from the ILYb, 1949-50 and 1950-51

railway workshop workers, who, though engaged in the actual manufacturing and repairing processes of the railway wagons, engines and spare parts thereof, draw their income from the railway finances and as such should be treated under railways. The actual number of such workers is given separately in the *Statistical Abstract* (SA) for 1950.

2.29. Tea manufacturing was included in agriculture in the First Report. Since processing (or manufacturing) of tea is now included in industry, employment in tea manufacturing (as given by the SSMI) has been included in factory employment.

2.30. *Statistics of employment in mines*: Information relating to employment in mines covered by the Indian Mines Act is collected by the Chief Inspector of Mines (CIM) and published in the annual report on the working of the Act. These statistics, however, relate only to class A States as they stood before partition. Further, they relate only to the mines covered by the Indian Mines Act, and do not take account of small mines and surface diggings.

2.31. The Geological Survey of India (GSI), however, collects statistics of employment in States not covered by the Mines Act and also for extractive enterprises in class A States not falling under the scope of the Mines Act. The GSI releases estimates of employment for the Indian Union using the figures furnished by the CIM for mines covered by the Mines Act and its own figures for other mines. This figure could be used as an independent check on the figure coming out of census occupation tables, and in fact this has been done. For our purpose we have adopted the latter estimate because its coverage appears to be wider. The former estimate does not cover certain minerals, *e.g.*, clay, barytes, felspar, gypsum, steatite, graphite and building materials, for which figures in respect of quantity and value of production are available but no employment data are released.

2.32. *Statistics of employment in small enterprises*: No data, such as those available for factories and mines, are available in respect of employment in cottage industries. Some estimate of employment in weaving is available in the *Report of the Fact Finding Committee (Handloom and Mills)* (1947). Scattered data are also available in respect of employment for some cottage industries in certain given regions, as given by local field enquiries or surveys. These are, however, by no means complete, nor is the information available in a form useful for the present purposes. Hence, all these estimates are useless in the context of employment in the whole country. Apart from these data, some *ad hoc* estimates of the employment in different cottage industries are also available, *e.g.*, the estimates made available by the DIS, but these are of the nature of guesses and not based on any scientific study. For statistics of employment for the cottage industries, therefore, one has perforce to fall back upon census occupation data. The estimational

procedure adopted has already been outlined in connection with notes on factory employment.

2.33. *Statistics of employment in plantations*: For tea, coffee and rubber plantations, figures regarding employment are available in a satisfactory form and are published in the ILYb and various publications of the Directorate of Economics and Statistics, Ministry of Food and Agriculture (DESAg). The only gap is in respect of some small scale coffee plantation, but some rough estimate for this also is given in the *Report on the Marketing of Coffee in India and Burma*. For estimation purposes, figures for 1950-51, 1949-50 and 1948-49 have been taken from the '*Indian Tea Statistics*' (DESAg), '*Indian Coffee Statistics*' (DESAg) and '*Indian Rubber Statistics*' (DESAg) for the respective years. Figures of absenteeism have, again, been worked out from the ILYb, and these employment figures, after adjustment for absenteeism, have been taken to give the number of gainfully occupied persons in plantations. The estimates as derived above have been preferred to the estimates derived from the census data and have been used for our table on working force.

2.34. *Statistics of employment in railways, and posts and telegraphs*: Statistics of employment in railways are available in the *Report by the Railway Board on Indian Railways*, published annually. Various categories of employees are differentiated as class I and II staff, class III staff drawing a monthly salary above Rs. 250, class III staff drawing a monthly salary below Rs. 250 and workshop and class IV staff. The above statistics are available by different departments, for each railway separately. These statistics are available only for the Indian Government railways (*i.e.*, railways under the Railway Board) but not for all Indian railways in a consolidated form. No regular data are, however, available in respect of casual labour employed by contractors for railway open line or maintenance works or for building or other projects. For 1948-49, however, according to the report of the Chief Labour Commissioner (Central) on the working of Payment of Wages Act on Railways, the number of such casual labourers is estimated at 518 thousand persons (ILYb, 1949-50). A study of the wage and salary bill of persons engaged in railways, reveals that the number of such persons is unlikely to exceed 50 p.c. of the above estimate. We have, therefore, added 2·6 lakh persons to the working force in railways as contract labour employed on railway works projects. This is necessary as contract labour is paid out of the railway finances. The Railway Board report does not also cover porters and coolies who work on railway premises but derive their living from passenger traffic. According to information received from the Railway Board, out of about six thousand railway stations in the Indian Union, there are two thousand major railway stations employing about 25 thousand licensed porters. Assuming that the rest of the four thousand stations would be employing about 5 thousand porters and coolies, their total number may be estimated at about 30 thousand.

Slight adjustment has also been made on account of the port trust railways, the employment figures for which are not given in the Railway Board report. For post and telegraph, similarly, annual departmental administration reports are available which give information on the strength of the gazetted and non-gazetted staff, with breakdowns for different employing departments. Here again, the coverage of the statistics is more or less complete apart from casual labour employed by contractors no independent estimate for which is available.

2.35. In the First Report, telegraph and railway workshop workers were supposed to have been included for population census purposes, in sub-class III, *i.e.*, industry and these workers were therefore, transferred by us to sub-class IV, *i.e.*, transport. In the 1951 census tables also, these workers have been returned under the sub-class 'industry'. The annual reports on railways and posts and telegraphs, however, reveal that these workers are in effect included in the direct departmental estimates and as such we have taken them out from the sub-class 'industry', as otherwise it would result in their double counting. Since, estimates of working force for railways and posts and telegraphs are not based on census data, no adjustment is necessary in the 'transport' sector on this count. Persons engaged in the construction and maintenance of roads, bridges and other transport works are, according to the 1951 census classification, returned under sub-division 5.2. From the accounts of the public authorities, it may be concluded that the railways employ nearly one-third of the number of persons in this sub-division and the public administration, roughly another one-third. The remaining one-third has been retained in the 'industry' sector.

2.36. *Statistics of employment in government departments*: The budgets of the Central, and a majority of the State Governments give the sanctioned strength of staff for the older departments. However, no such figures are available for newly started schemes or departments. Further, no periodic information is available in respect of contract labour employed by contractors working for the Central or State public works departments. Hence, the data given in the budget accounts are incomplete. The data, even as they are, are not consolidated at present, only a consolidated figure for the Central Government being available for the recent past period. This last figure, together with change in employment, is published in the *Monthly Abstract of Statistics*. Statistics of employment in the armed forces and in the defence services are not released for security reasons. However, the census estimate of employees of the Union Government which we have used is inclusive of public forces. Even in the government sector, therefore, proper man-power statistics are not available; further, the figures that are available are not collected and presented in a readily useful form. Lastly, employment provided by the State Governments is also not generally available except for a few States.

2.37. *Statistics of employment in municipalities, improvement and port trusts, and other local authorities*: No data are available in respect of employment in local governments, etc. The Labour Investigation Committee report on principal municipalities in India gave some indication of employment (by different categories) in certain municipalities, but the information is not available for the entire country. Information is at present obtained from all municipalities by State Governments on the details of taxation and other items of revenue and of appropriations for expenditure but not regarding employment. The same deficiency exists in respect of district boards, union boards and other local authorities. In the absence of employment statistics for these, no estimate is possible for the total employment provided by the public authorities sector as a whole. The number of persons engaged in administration, local or central, cannot therefore be assessed, except from the census occupation returns. The latter are defective in this respect for several reasons. In the first place, the population census is taken only once in ten years. Although this defect would apply for all occupations, it would have special bearing for this sector in times such as the present, in view of the rapid changes in the sphere of governmental activity. Thus, in recent years, the strength of government administrative departments has increased considerably. Temporary activities like rationing of foodgrains, etc., call for vast organisational staff which may be recruited and disbanded between two census years. Another defect of the census occupation data is that professional workers like doctors and teachers in the employ of government may either be enumerated under their professional categories or under government. This latter difficulty creates problems of accounting of available man-power for purposes of national income estimation. Finally, the census occupation tables make no distinction between persons in the employ of the Central Government, State Governments, municipalities and various public corporations (like, for instance, the Damodar Valley Corporation). Nor would there be any distinction in the census occupation returns between purely administrative departments, technical institutions (like, for instance, a government polytechnic) and purely commercial activities of the State (like the Delhi Transport Service). For all the above reasons, reliance on census occupation data for figures of employment in the government sector appears to be unsatisfactory. And yet, as at present available, budget data alone cannot replace the information contained in the census figures of employment in government. In fact, therefore, census occupation data have been utilised for the present purposes of deriving total employment in government services (administration).

2.38. *Statistics of employment in miscellaneous other sectors*: Some statistics are available regarding the number of persons employed in educational institutions, film industry, urban commercial houses, etc. Educational statistics collected until very recently, and published in the SA,

did not give any figures of employment; recently, a new proforma for the collection of comprehensive educational statistics has been circulated by the Central Ministry of Education. Data on employment in (both teaching and non-teaching) institutions are now available with effect from 1947-48. No current estimate of employment in banks is available and hence an arbitrary figure based on the number of branches has been used for our purpose. This is because it is not possible to derive an estimate of working force for banks on the basis of census returns. For insurance, we have used the census data in the absence of any current material. The procedure followed leads to an understatement of the working force in organised banking and insurance but does not affect the estimate of income. For the film industry, some very rough estimates of employment are available in the *Report of the Indian Film Enquiry Committee* (1951), and also in the *Journal of the Film Industry*. These are conventional estimates, and at best very rough approximations. As regards the statistics of employment in urban commercial houses, data are available in respect of Bombay State, under the Shops and Establishment Act of 1948, covering shops, commercial establishments, residential hotels, restaurants and eating houses, and theatres and other places of public amusement. The data collected so far relate to 56 out of 62 municipalities or 'local areas', and give break-downs of the number of employers and employees in different occupations and different employment*. Similar, though more limited data, are also available for a number of other States, in *The Indian and Pakistan Year Book* (1951). Some other data, collected on a different basis, are also available from the pilot census of retail trade, carried out by the Ministry of Commerce and Industry, for Delhi. A similar project is also in hand for Uttar Pradesh. In the absence of all-India estimates, however, the available data are of only limited significance and it is necessary to make use of the census data for preparation of the estimate of working force.

2.39. An examination of the different sources of annually collected employment returns shows that their compilation has not been made with the idea of carrying forward the estimates based on the decennial censuses. The census occupation data serve the purpose of disclosing the occupational structure only once in ten years. In order that this information could be of use from year to year, this information needs be supplemented by other types of annual statistics bearing on the employment situation in the country. At present there is complete lack of information in this respect especially in relation to the agriculture sector, small enterprises, trade, and a major part of professions and services, while the coverage of material on the other sectors is somewhat meagre.

2.40. Given below are estimates of the working force for 1950-51, 1949-50 and 1948-49, based mainly on census data but adjusted in the light of the annual employment statistics discussed above.

* *Cf.*, *The Bulletin of the Bureau of Economics and Statistics*, Bombay, October, 1950.

TABLE 5 : DISTRIBUTION OF WORKING FORCE BY INDUSTRIES

(numbers in thousands)

items	1950-51		1949-50		1948-49	
	number	p.c.	number	p.c.	number	p.c.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. agriculture, animal husbandry and ancillary activities	1,02,711	71.8	1,01,135	71·8	99,591	71·8
2. forestry	350	0·2	349	0·2	348	0·2
3. fishery	579	0·4	578	0·4	577	0·4
4. total of agriculture	1,03,640	72·4	1,02,062	72·4	1,00,516	72·4
5. mining	780	0·5	778	0·5	777	0·6
6. factory establishments	2,969	2·1	3,070	2·2	3,065	2·2
7. small enterprises	11,521	8·0	11,323	8·0	11,230	8·1
8. total of mining, manufacturing and hand-trades	15,270	10·6	15,171	10·8	15,072	10·9
9. communications (post, telegraph and telephone)	195	0·1	175	0·1	169	0·1
10. railways	1,178	0·8	1,181	0·8	1,192	0·9
11. organised banking and insurance	147	0·1	147	0·1	147	0·1
12. other commerce and transport	9,533	6·7	9,437	6·7	9,343	6·7
13. total of commerce, transport and communications	11,053	7·7	10,940	7·7	10,851	7·8
14. professions and liberal arts	6,425	4·5	6,191	4·4	6,016	4·3
15. government services (administration)	3,886	2·7	3,765	2·7	3,597	2·6
16. domestic service	2,947	2·1	2,847	2·0	2,751	2·0
17. house property	..	..	..	..	..	..
18. total of other services	13,258	9·3	12,803	9·1	12,364	8·9
19. total working force	1,43,221	100·0	1,40,976	100·0	1,38,803	100·0
20. population	3,59,334	..	3,54,820	..	3,50,379	..

B. *Income from agriculture*

2.41. In deriving the income from agriculture, it is necessary to estimate the agricultural output and the deductions necessary therefrom for netting. We will find that in both of these there are a number of gaps, ambiguities and other difficulties, which reduce the accuracy of the income figures from agriculture.

2.42. The estimate of output is derived by multiplying acreage with yield rate. We review below the basic material available under these heads.

2.43. Direct estimates of outturn are available in respect of the major crops in a large part of the Indian Union area from the periodic crop 'forecasts' made by the DESAg. For 1948-49, these relate to rice, jowar, bajra, maize, ragi, wheat, barley, gram, sugarcane, sesamum, groundnut, rape and mustard, linseed, castor, cotton and jute. Of the remaining crops, periodic estimates of outturn are prepared by the DESAg for small millets, other pulses, potato, sweet potato, ginger, pepper, chillies, tea, coffee, banana, indigo, sann hemp, tapioca, coconut, opium and rubber. In respect of some other crops for which such periodic estimates are not available, there are *ad hoc* estimates, which exist in the Directorate of Marketing and Inspection (DMI) or in the Marketing Report (MR)s and which have been used by us in this report. These relate to cardamom, citrus fruits, grape, cashewnut and mango. There still remain, however, a number of crops for which area figures are available in the *Agricultural Statistics of India* (AgSt) but no figures of yield. We have, therefore, supplemented our use of the forecast data and other estimates by the figures of crop utilisation given in the AgSt. We have also used the AgSt area data in preference to the 'forecast' area data in the case of those States where the area coverage of the forecasts is less than that of the AgSt.

2.44. *Area*: A major difficulty in combining the forecast yield data with the crop area data given in the AgSt relates to the difference of coverage of the two estimates in respect of area. The basic statistics regarding area are contained in the AgSt. These are usually available with a lag of two years, even in manuscript form, and take much longer to get published. They contain statistics of land utilisation for 615 million acres—the area for which village papers exist—out of the total geographical area of roughly 811 million acres*. There, thus still remains the cadastrally unsurveyed area of 196 million acres which is roughly 24 p.c. of the total geographical area of the country, for which land utilisation figures are not available. These areas consist mostly of the Assam states, Central India states and a large part of Kashmir. From the point of view of statistics of land utilisation, therefore, these areas form what might be termed as non-reporting tracts. A rough idea of the different types of acreage statistics available may be formed from the following table relating to 1948-49; later data are not available in an identical form.

* 811 million acres including the enemy held territory in Kashmir.

TABLE 6 : THE AVAILABILITY OF STATISTICS OF ACREAGE IN INDIA IN 1948—49

(in million acres)

		reporting		total reporting	non-reporting	total
		based on complete enumeration	estimated			
1		2	3	4	5	6
temporarily settled provinces	surveyed	232	..	232	..	232
	unsurveyed	..	87	87	..	87
	total	232	87	319	..	319
permanently settled provinces	surveyed	..	73	73	..	73
	unsurveyed	..	10	10	..	10
	total	..	83	83	..	83
Indian States	surveyed	145	5	150	49	199
	unsurveyed	..	5	5	175(*a*)	180
	total	145	10	155	224	379
total surveyed		377	78	455	49	504
total unsurveyed		..	102	102	175	277
grand total		377	180	557	224	781(*b*)

(*a*) Obtained by subtraction from the total area.

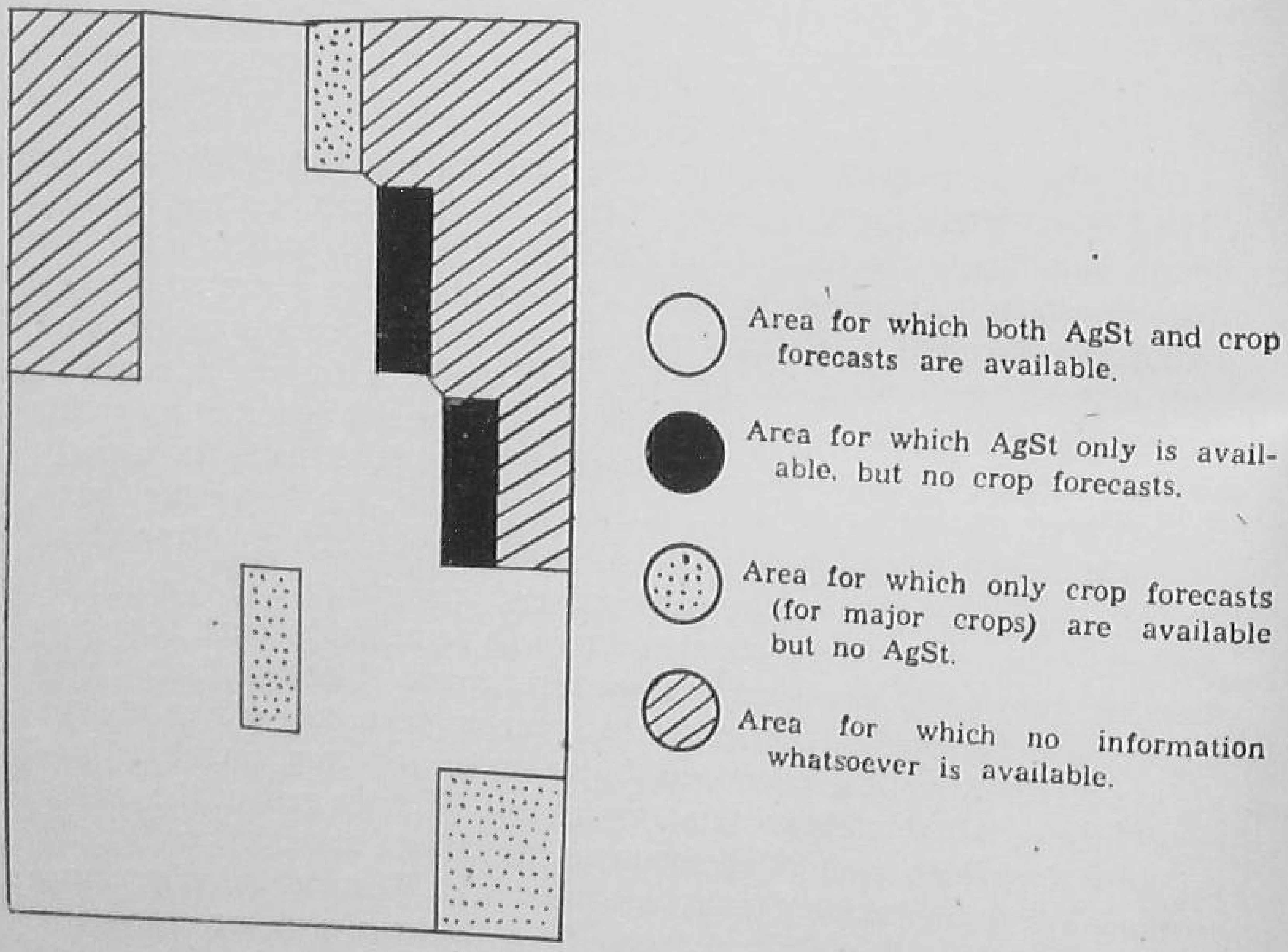
(*b*) As given in the *Census of India Paper No. 2, 1949*.

2.45. The above table, adapted from the *Co-ordination of Agricultural Statistics in India* (1950), Ministry of Agriculture, does not give the latest figures, total area according to this table being only 781 million acres. As will be seen from the above, even for the reporting area, there are pockets of unsurveyed areas. The terms reporting and non-reporting have been used here in the context of the AgSt, *i.e.*, the area for which complete accounting of land utilisation is possible. From the standpoint of reliability of data, therefore, there are four broad types of land statistics, namely, (i) surveyed and reporting area, (ii) surveyed but non-reporting area, (iii) unsurveyed reporting area, and (iv) unsurveyed non-reporting area.

2.46. Even in regard to the surveyed and reporting area which is generally based on a system of patwari records, some doubt exists regarding their accuracy. It is suspected that patwari records of land utilisation may become conventional in the sense that year to year fluctuations are not always recorded and the estimates of area under any crop, therefore, tend to become serially correlated to a large extent. For the rest of the reporting areas for which such detailed patwari records do not exist, *i.e.*, for the permanently settled areas, (with the exception of West Bengal where crop estimates are on a sample survey basis), the statistics of area are even more questionable. Thus the recent Bihar area survey based on complete enumeration revealed the previously reported estimates of the total area cultivated to be an under-estimate by as much as 8 million acres for all crops taken together. The position regarding land utilisation statistics is

even more unsatisfactory in the case of the non-reporting areas the bulk of which is unsurveyed and relates to that part of the Indian Union which was previously included in the Indian States.

2.47. *Outturn*: A major difficulty in respect of crop forecasts prepared by the DESAg is that the area covered by these forecasts is not the same as the area covered by the AgSt. The reason for this is two-fold: (i) since the AgSt is compiled only for those areas for which complete land utilisation statistics are available, and since additional area estimates are frequently available for the major products grown outside that area, the coverage of forecasts extends beyond the area covered by the AgSt and (ii) it does not also happen that the entire area reporting for the AgSt also reports for these forecasts, as the availability of outturn statistics side by side with area estimates is required for inclusion in the forecasts. The matter is complicated further because the two sets of estimates are not strictly comparable in the sense that the extent of their coverage is not precisely known. The following diagram may serve to illustrate the complicated nature of the problem in respect of the coverage of different statistics relating to agriculture.



2.48. As the bulk of our estimates of outturn is based upon forecast data, it becomes necessary to discuss the reliability of the forecasting agency and the method of forecast. The traditional crop outturn estimates

depend on three variables: the area, the 'normal yield' and the 'seasonal factor'. We have already commented upon the area estimates from the point of view of their reliability. The 'normal yield' is supposed to be based on periodic crop-cutting experiments carried out by district authorities on a sample basis, the average yield for a recent period being taken as the normal. There are several difficulties attendant on this procedure. The crop-cutting experiments conducted by the district authorities are based on purposive sampling and not on a strictly random sample basis. Neither the size of the plot nor the number of experiments is adequate for the purposes of generalisation. The normal thus fixed becomes the normal yield for the entire district irrespective of variations within the district.

2.49. The 'seasonal factor' is decided by the patwari on the basis of eye estimation, and the crop is estimated as a certain portion of the normal. What the patwari regards as the normal crop is not linked with the district normal discussed in the previous paragraph. In fact, each patwari has his own conception of the normal crop for his village and there is no way of relating this to the district figure. Apart, therefore, from subjective bias in estimation, the interpretation of the normal yield rests entirely on the patwari. The seasonal factor is usually expressed as so many annas to the rupee, and in a large number of cases the normal is taken to be either 12 or 14 rather than 16 annas. Apart from the above, the method of eye estimation makes for a general toning down of fluctuations in the actual yield and it has been contended that the patwari has a tendency to under-estimate the outturn in a bumper year and to over-estimate the outturn in a lean year. The result is some sort of a moving average over a period of years rather than actual outturn from year to year. In permanently settled areas, except West Bengal, this estimate of outturn is even more inaccurate, as there is no proper revenue agency for reporting the outturn.

2.50. The estimates of outturn in respect of mixed crops present another difficulty. Mixed sowings are quite popular in a large part of the country. There are two distinct systems of mixed sowing, one where the sowings are in different or alternative rows, and the other, where the sowings are completely mixed together. In respect of the former, it is possible to frame some sort of rough estimate of the area under each of these crops. by counting the rows occupied by each. In the latter case, however, it is not possible to frame any such estimates and conventional ratios are adopted. Further, the outturn rates adopted for mixed crops are the same as those for 'pure' crops. Thus, for instance in the event of a mixture of wheat and gram, the outturn of wheat is taken at the same rate per acre as that applying for unmixed wheat areas. It is not known to what extent this may result in error in estimation, as experimental results on this subject are still inconclusive.

2.51. Apart from the above problem of outturn estimation, there are several other minor complicating factors in outturn estimation. The units of measurement are not uniform and there is considerable difficulty in respect of the driage of certain crops. Thus, for instance, the outturn estimates for ginger and chillies are either in terms of dry ginger and chillies or in terms of green ginger and chillies; also it is not known if the driage allowance is uniform in different parts of the country. Another complicating factor is the question of conversion ratio for paddy. The officially accepted ratio is 67 p.c., while in actual practice the conversion ratio is reported to vary from 55 to 72 p.c. For a crop like rice, any small error in the conversion ratio would make for substantial error in the estimate of outturn of cleaned rice. For national income purposes, it might have been convenient to avoid the problem by evaluating the outturn of paddy, but this is complicated by the fact that paddy prices are not available except for a few States.

2.52. Apart from the official forecasts of crop outturn, the Indian Council of Agricultural Research (ICAR) has for some time been conducting random crop cutting surveys in respect of the major crops in a large part of the country. Until recently the ICAR experiments were confined to rice and wheat and to the class A States. In recent years the extent and coverage of experiments have been increasing. Statistics of yield rate as estimated by the ICAR are likely to be firmer than official estimates, because they are based on more scientific procedure. We have, therefore, used these figures wherever available in preference to the official forecast figures.

2.53. *Prices*: The major problem in respect of price statistics is to secure prices that are relevant for the producer. This requires an appraisal of the time-spread of both sales and of prices. Theoretically each act of sale should be treated independently and the total product sold evaluated at prices appropriate for these individual sales. In practice, however, it is not possible to adhere to such a strict definition of the value of product to the producer and it is necessary to have recourse to averaging. An additional problem in connection with available price statistics is that prices are available only for certain final types of products, so that a large number of ancillary activities are also included in the value of the products sold. This problem is not basically one of the deficiency of price statistics but a problem of the nature of the economy where the functional distribution of economic activity is not specialised to a high degree. In seeking to find out the national income by industrial origin, this creates difficulties in so far as it is only possible to estimate the product resulting from several activities; and to the extent, the fundamental accounting entities, which are the households, perform more than one economic function, such difficulties are inevitable. Thus it happens that the value of the product in agriculture sector includes some processing and also some trading

activity by the primary producers and it is not possible to isolate the contribution of these different types of activity very clearly. The other important problem in this field relates to the representativeness of the price average used. The 'ideal' average should take account of the regional disparity of the prices, the quality differences, and the temporal disparity of prices. Moreover it should be based on a sufficiently large number of quotations so as to minimise the sampling type of error; also, the type of average used for estimation should be as efficient as possible. Weighted mean, of prices during the period in which the harvest yield is disposed of at markets at which bulk of the producers sell their produce would have been a fair approximation to this ideal. We have not, however, succeeded in going anywhere near this for lack of adequate statistics needed for the purpose. Our estimates are based, generally, on median of harvest period prices and the estimation is made at the State level.

2.54. The available statistical material relating to prices is varied and diverse. There are different series of prices and these may be considered one by one as follows:—

(a) harvest prices;

(b) wholesale prices;

(c) retail prices; and

(d) procurement prices.

2.55. *Harvest Prices*: There are at present available two sets of harvest prices, one collected by different branches of the Imperial Bank of India and the other as published in the Season and Crop Reports for different States. Both these sets of harvest prices are really wholesale prices in important produce markets during the harvest time. They are mostly urban prices and certainly include profits of the wholesalers or the bigger grain merchants. To the extent that there are a large number of middlemen between the wholesale trade merchant in these primary produce mandis (markets) and the cultivator, there would be an element of trade margin included in prices thus collected. The advantage of these prices, however, is that they cover a large number of commodities and are also available for a large part of the country. While the Imperial Bank quotations cover only the more important produce mandis, the Season and Crop Reports give harvest prices for each district. A defect of the harvest prices given in the Season and Crop Reports of a few States, namely, Bombay and Madras and for a few crops in Madhya Pradesh and Uttar Pradesh is that they are actually retail prices during harvest time. All these harvest prices—*i.e.*, both the Imperial Bank and the Season and Crop Reports price series—are, therefore, not prices obtained by the producers, and any use of these prices implies that some trade margin would also be included in the price of products evaluated. A new definition of harvest prices has recently been evolved by the Ministry of Food and

Agriculture which have circulated a scheme for the collection of 'farm prices' for principal crops on an all-India basis. These prices have been defined as the average wholesale price at which the commodity is disposed of by the producer to the trader at the village site during a specified harvest period. A scheme for the implementation of the above proposal, in a standardised form, has been circulated by the DESAg to the various State Governments.

2.56. *Wholesale Prices*: Wholesale prices are available with the DESAg and published in three different sets of publications: (i) the *Agricultural Situation of India* (ASI) (Monthly), (ii) the *Wholesale Prices of Foodgrains* (Weekly); and (iii) the *Bulletin of Agricultural Prices* (Weekly). These prices cover most of the foodgrains for a large part of the Indian Union area, and week to week quotations are published for important market centres for each crop. Alternative sets of wholesale prices are available in various State Government gazettes which give wholesale and retail prices.

2.57. *Retail Prices*: Retail prices are published by the DESAg in the *Bulletin of Agricultural Prices* and are also available in State Government gazettes. From the point of view of evaluation of crop output, retail prices are not of any value. However, for the determination of trading profits, these can be used for deriving trade margins on different types of products.

2.58. *Procurement Prices*: Procurement prices are also available with the DESAg but these prices cannot clearly be used for the entire volume of product for a number of reasons. Procurement prices are generally lower than the current market prices. These prices may indicate a lower limit to existing prices but by no means indicate the general level of prices relevant for the producers. To the extent that foodgrains are procured, the use of procurement prices is justified, but these prices cannot form the basis of valuation of the entire product.

2.59. The available statistical material relating to prices as outlined above, has a number of limitations. The available prices show wide divergences between regions and often, even within a geographical or economic region between districts. In the background of such wide regional divergences, the complete non-availability of prices for certain areas makes for considerable uncertainty in the valuation of national income. The present procedure of valuation of crop output in such areas has been to make use of prices in contiguous areas, but even the above procedure does not solve the problem.

2.60. One of the serious limitations of price data available is the lack of clear-cut definition of prices. The definition of harvest prices, for instance, differs from State to State. Although it represents prices during harvest time, careful analysis has shown that these harvest prices are frequently higher than the averages over comparable harvest period

calculated on the basis of the wholesale prices in small market towns or primary produce mandis referred to in paragraph 2.55. These wholesale price quotations, available week by week, offer greater area coverage. These prices, however, are not available separately for products of different quality and occasionally appear to be merely conventional prices in the sense that quotations are repeated from week to week.

2.61. In spite of the limitations noted above, we have had to use such price data as are available; and on the whole we have preferred to use the wholesale prices during harvesting period for purposes of valuing the agricultural output. The use of wholesale prices for valuation of crop output at once results in: (a) removal of doubt as to the nature of price data used, as they are much clearer in definition and coverage, and (b) makes possible the use of a really representative price average since wholesale price quotations are available for major crops for each district in the major States. Further, the average price for each State being the average of a number of weekly quotations for a large number of centres, it is possible that prices of different common varieties get into the average used.

2.62. Land utilisation statistics as given in the AgSt are available upto 1949-50, subject to the following limitations:—

(1) *1949-50*

(a) Mysore: figures relate to 1948-49.

(b) Travancore-Cochin: figures relate to 1948-49.

(c) Rajasthan: figures relate to 1947-48.

(d) Saurashtra: figures relate to 1947-48.

(2) *1948-49*

(a) Rajasthan: figures relate to 1947-48.

(b) Saurashtra: figures relate to 1947-48.

(c) Bombay (merged states only): figures relate to 1947-48

(d) Vindhya Pradesh: figures relate to 1947-48.

(3) There is an increase of about 32 million acres in the area reporting agricultural statistics which is mainly shared by Bombay, Jammu and Kashmir, Madhya Bharat and Vindhya Pradesh. Some of the details are shown below:

(a) Bihar: The area according to village papers has increased by 0·5 million acres. This is due to a switching over from chowkidari system of area reporting to complete enumeration. In the *Estimates of Area and Production of Principal Crops in India*, the

acreage figures on complete enumeration basis are supplied by the State from the year 1948-49.

(b) Bombay: The area coverage has increased by 12·2 million acres. This is mainly due to the inclusion of merged states in the area reported.

(c) Orissa: The area coverage has decreased by 1·8 million acres mainly because of transfer of certain areas from a reporting district.

(d) Uttar Pradesh: The area coverage has increased by 0·8 million acres, owing to the transfer of some border areas from Madhya Bharat.

(e) Jammu and Kashmir: The area coverage has increased by 2·4 million acres.

(f) Madhya Bharat: The (net) area coverage has increased by 5·1 million acres (after deduction of area lost to Uttar Pradesh).

(g) Vindhya Pradesh: The area coverage has increased by 12·7 million acres mainly due to inclusion of some of the previously non-reporting areas.

2.63. Owing to the limitations of available data, as outlined above, the following procedure has been adopted. For all States with area completely covered by the land utilisation statistics, (*e.g.*, most class A States) the crop area figures given by the land utilisation statistics have been adopted for estimation of the cultivated area, both for 1948-49 and for 1949-50. The area estimates for 1948-49 have been adjusted for the increased coverage of data available for 1949-50. For all States where the coverage of the land utilisation statistics is incomplete, revised estimates (based on crop forecasts) have been adopted for forecast crops. For all other crops, area estimates according to land utilisation statistics have been taken. In the case of 1950-51, revised estimates (crop forecast) figures have been adopted for forecast crops and land utilisation statistics for 1949-50 for other crops. The position may be summarised as follows: Revised estimates for forecast crops were adopted (a) for 1948-49: in respect of Bihar, Bombay, Orissa, Madhya Bharat, PEPSU, Rajasthan, Saurashtra, and Vindhya Pradesh; and (b) for 1949-50: in respect of Orissa, Madhya Bharat, Rajasthan and Saurashtra.

2.64. Estimates of out-turn have been derived on the same basis as outlined in the First Report, namely, on the basis of the ICAR yield rates wherever these are available, and revised estimates for all other forecast

crops (where the ICAR yield estimates are not available). The ICAR survey estimates are available for the following areas:—

name of crop	States for which ICAR random crop cutting survey results are available and have been used for estimating crop out-turn.		
	1950-51	1949-50	1948-49
rice	all class A States (except W. Bengal and Punjab) and Coorg	all class A States (except W. Bengal and Punjab) and Coorg	all class A States (except W. Bengal and Punjab) and Coorg
wheat	Bihar, Bombay, Madhya Pradesh, Punjab, Uttar Pradesh, Ajmer and Delhi	Bihar, Bombay, Madhya Pradesh, Punjab, Uttar Pradesh, Ajmer and Delhi	Bihar, Bombay, Madhya Pradesh, Punjab, Uttar Pradesh, Ajmer and Delhi
jowar	Bombay and Madhya Pradesh	Bombay and Madhya Pradesh	..
bajra	Bombay	Bombay	..
g am	Bihar, Madhya Pradesh and Uttar Pradesh	Bihar and Uttar Pradesh	..
barley	Bihar and Uttar Pradesh	Uttar Pradesh	..
tobacco . . .	Bombay	Bombay	..
masur	..	Bihar	..
jute	Orissa	..	..
cotton	Bombay and Madhya Pradesh	..	..

Apart from the above, estimates for all forecast crops in West Bengal are based on random surveys conducted until lately by the Indian Statistical Institute (ISI), and now by the State Statistical Bureau. For cotton, the mean of the two consumption estimates (based on returns of cotton ginning and pressing, and on textile mill consumption of raw cotton) as prepared by the Indian Central Cotton Committee, has been used.

2.65. Departures from the First Report, in respect of out-turn estimates, are as follows:—

(a) The gross value of output of tea has been derived from the SSMI for 1949 and 1950, the value of input of raw tea in the manufacturing sector having been considered as the value of raw tea output in the agriculture sector. For 1948-49, the 1949-50 estimate has been deflated by the ratio of total tea output as given by the DESAg for the two years. This procedure in respect of tea has been adopted in order to ensure avoidance of double counting of the value of tea in agriculture and in the factory establishments sector.

(b) Area and out-turn estimates for arhar, urd, mung, and masur, for all the three years, have been taken from the Ministry of Food and Agriculture, and the earlier procedure of using conventional MR estimates has been rejected. For arhar sticks (not evaluated earlier), yield estimates (as related to output of arhar) have been obtained from the Indian Agricultural Research Institute (IARI) and Government agricultural colleges and attached State farms.

(c) Area and out-turn estimates for chillies, pepper and ginger have been obtained from the Ministry of Food and Agriculture.

(d) Finally, area and out-turn estimates for banana, sweet potato and tapioca have been taken from the DESAg. For 1950-51, area, outturn and value of mango were available from the DMI.

2.66. For the reasons already indicated, we have used average wholesale prices during the harvesting period, wherever these are available. However, as these prices are market prices of the crop, they imply two things; first, they include the cost of processing of the crop like winnowing, threshing, sifting of the grain from the husk, etc., including handpounding of rice or parboiling wherever this practice is customary; and secondly, these market prices include the payment for certain trading activities and for storage or at any rate for transportation of the product from the field to the market. As actual prices received by the cultivator on the village site are not known, it is necessary in the present context to change the definition of income from agriculture from a strictly industrial definition to one relating to fundamental accounting entities. Thus, rice output implies not merely the cultivation of rice but also its processing and its transportation to the nearest wholesale market. This is necessitated by the fact that it is not possible to evaluate separately the different functions performed by the cultivator in respect of crop production. This is perfectly in order in so far as processing of crops is concerned, and to a small extent, even to primary marketing, since, the accounting entity in this instance would be the farmer, and his income from the farm would include payment for the processing and marketing of farm products. As regards the problem of evaluation of home consumption of one's own produce, we have used the same prices as those used for the marketed portion of the produce.

2.67. Quite apart from the above major change in respect of the basis of valuation, some changes have also been made in the estimates of price and/or average value per acre for crops for which out-turn and price data are not directly available, as follows:—

(a) small millets: out-turn has been evaluated at ragi price, less 10 p.c.;

(b) other cereals (for which no out-turn data are available): value per acre of small millets has been adopted;

(c) other pulses: the value per acre of mung (with the lowest value per acre among pulses for which direct estimation is possible) *less* 10 p.c. has been adopted;

(d) other oilseeds: the value per acre of castor seed (lowest among oilseeds for which direct estimation has been possible), *less* 10 p.c. has been adopted;

(e) other sugars: the value per acre of gur (excluding the value of molasses and bagasse) has been adopted. In this context, the use of independent estimates of out-turn, based on the MR on sugar, has been abandoned;

(f) other dyes: the value per acre of indigo, *less* 10 p.c., has been adopted;

(g) other fibres: the value per acre of sann hemp, *less* 10 p.c., has been adopted;

(h) other drugs and narcotics: the value per acre of opium, *less* 10 p.c., has been adopted;

(i) other fruits and vegetables: the average value per acre of all fruits and vegetables (except grapes) for which direct estimation has been possible, has been adopted. Grapes have been omitted for this purpose owing to its extremely high value per acre and the extremely small area on which grapes are raised;

(j) fodder crops: the value per acre of small millets (including the value of straw) has been adopted.

2.68. The basis of the 10 p.c. deflation of the value per acre of known crops for valuation of minor crops has been that inferior cereals, pulses, condiments and spices, etc., would have a lower value than more important and higher priced (marketed) products. In respect of 'other fruits and vegetables' no deflation has been made because quite a few important fruits and vegetables have been left out of the ambit of direct valuation.

2.69. Apart from the above departures from methods adopted in the First Report, the estimates for 1949-50 and 1950-51 for miscellaneous food and non-food crops have been derived by inflating the 1948-49 estimates of value per acre by means of the all-India general wholesale price indices, as prepared by the Economic Adviser to the Ministry of Commerce (EACom). Similarly, the average price of straw used for 1948-49 has been adjusted by means of the same index and used for evaluation of output of straw in 1949-50 and 1950-51.

2.70. We give below a summary statement of area, out-turn and value of crop output in the Indian Union, for 1950-51, 1949-50 and 1948-49. Some of the crops, the value of which is of an insignificant order, have been lumped together.

TABLE 7: AREA, OUTTURN AND VALUE OF CROPS

crops	area (lakh acres)			outturn (lakh tons)			value (Rs. crores)		
	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. rice	760	756	728	219	234	245	1199	1079	1116
2. jowar	384	383	369	56	58	50	194	181	189
3. bajra	223	229	197	25	26	21	81	89	94
4. maize	78	83	80	17	21	19	60	65	64
5. ragi	54	59	57	14	16	15	35	39	39
6. wheat	241	242	220	68	65	53	334	285	285
7. barley	77	79	79	24	22	23	80	78	79
8. other cereals	151	152	158	..	..	..	51	55	56
9. gram	187	206	205	37	37	45	147	123	154
10. arhar	54	70	66	17	15	13	83	62	56
11. other pulses	231	224	219	30	..	..	159	125	116
12. linseed	34	38	38	4	4	4	26	26	22
13. sesamum	56	52	48	5	4	4	46	37	27
14. groundnut	111	104	92	34	36	29	216	202	130
15. rape and mustard	51	48	47	7	8	8	69	67	49
16. cottonseed	..	..	..	11	10	9	38	37	26
17. coconut	15	15	14	33(a)	32(a)	32(a)	76	57	49
18. other oilseeds	42	43	42	..	..	..	16	18	17
19. sugarcane (gur)	42	37	38	56	50	49	305	273	203
20. cotton	139	122	113	33(b)	30(b)	25(b)	113	94	71
21. jute	15	12	8	33(c)	31(c)	21(c)	58	53	33
22. tea	7	8	8	13	..	..	26(d)	24(d)	24(d)
23. tobacco	9	9	8	3	3	3	71	58	38
24. chillies	13	12	12	3	3	3	68	60	41
25. other spices, etc.	12	12	12	..	..	..	89	80	50
26. potato	6	6	5	16	15	13	56	33	27
27. banana	3	3	3	18	18	19	53	49	50
28. other fruits and vegetables	41	41	46	..	..	..	277	261	294
29. fodder crops	112	112	114	..	..	..	53	56	55
30. straw	..	..	..	997	1052	1027	591	586	559
31. other crops	55	55	58	..	..	..	100	97	84
32. rice husk and bran, etc.	..	..	..	..	..	..	96	93	73
33. total	3203	3212	3084	..	..	..	4866	4442	4170

(a) hundred million nuts

(b) lakh bales (1 bale = 392 lbs)

(c) lakh bales (1 bale = 400 lbs)

(d) value of raw tea leaf only.

2.71. *Deductions for derivation of net value of agriculture*: The source material in this connection is extremely scanty and no all-India estimates are available in respect of cost of cultivation. The available material relates to local enquiries for widely different purposes, and is, in any case, of extremely doubtful generality even for these local areas, being based on a few case studies rather than any scientific survey. The only really comprehensive material in this connection relates to the ICAR *Report on the Cost of Production of Crops in Principal Sugarcane and Cotton Tracts of India*. The utility of these studies, however, is considerably marred by the fact that these studies are concerned with the derivation of cost per crop in terms of money. This has resulted in a large degree of arbitrary allocation of overhead costs (as between crops) which cannot properly be divided, *e.g.*, the repairs and the depreciation of implements, the cost of cattle required on farm, etc. The major difficulty in the use of the ICAR results, however, is the mixing up of all sorts of imputed items as the constituent of cultivation costs per acre, including labour of the cultivator himself and of his family. From the point of view of national income accounting, therefore, only a few ratios, *e.g.*, of relative expenditure on implements *vis-a-vis* the total expenditure on seed or manure, etc., can be utilised. Even these ratios are of limited value because it is by no means certain that relative prices have remained constant over the long period under consideration.

2.72. Apart from the ICAR cost of cultivation enquiries, there are no all-India studies of cultivation costs which might be utilised for the derivation of net value of agriculture. A large number of local enquiries are, however, available, and these give cost data of different orders of reliability and with varying degrees of detail. Furthermore, the greatest difficulty in respect of such studies is their limited generality. The more prominent of these studies are various cost of cultivation enquiries and family budget studies conducted by the Punjab Board of Economic Inquiry (PBEI), some isolated studies conducted by the Gokhale Institute of Politics and Economics in Western India, and some scattered material for a few other States like Bengal, Assam, Uttar Pradesh and Punjab. Apart from these, a number of unpublished research dissertations are also available giving the results of isolated field surveys conducted by research students but these again are of extremely limited significance. It may be useful to consider the material available and the reliability of estimates, in relation to various items of deductions that are necessary for the derivation of net value of agriculture.

2.73. *Seed requirements*: Figures of seed requirement have been derived mainly from the various MRs published by the DMI, supplemented by data available in Watt's *A Dictionary of Economic Products of India* and Aiyer's *Field Crops of India*. In the absence of comprehensive cost of production studies, there was no other alternative. Seed rates have been

calculated separately for different States for all the major crops, whereas in our **First Report** we had only used all-India average seed rates.

2.74. *Wastage*: Information on this item also is largely available in the MRs, where the results are based on a few case studies and also on general impressions rather than on any strictly scientific enquiry. Overall estimates are available for the percentage wastage of different crops though the reliability of these estimates is not known. As opposed to estimates of seed requirement, these estimates are likely to contain a greater degree of error. We have, however, made no deduction for wastage from the value of agricultural output. This is because we have transferred to the trading sector the wastage involved in the storage of marketed output, while for the non-marketed or retained output, we have taken the view that it is a part of wastage attending on consumption and need not therefore be deducted when computing agricultural income. The adjustment involved, however, even if we did make a deduction on this account, would only be of the order of 1 p.c. of the value of total agricultural output.

2.75. *Manure and fertilisers*: Information on these items of cost is not satisfactory and what has been done here is to make use of scattered material on the subject to the best possible advantage. Dung, oilcakes, bone manures, green manures and urban and rural composts are the different types of manure which we have considered. For dung manure, we have relied on the estimates of outturn of dung, and its allocation into various uses, *viz.*, use as fuel, as manure and for other purposes. Information on the subject is available in the MRs, Burn's *Technological Possibilities of Agricultural Development in India*, and a number of other publications including various localised cattle utilisation studies. The estimation of the output of dung manure has been described in its appropriate place in the animal husbandry sector. Estimates of total quantity of oilcakes produced in 1948-49 are available in the *Indian Oilseeds Statistics* (1950). From the data on outturn of oilseeds, their utilization for different purposes and the seed/cake ratio it is possible to estimate the quantities in the other two years. Data on utilisation of oilcakes for manurial purposes are very scanty. The MRs, however, give quantitative data in a few cases and some qualitative information in some other cases. These, supplemented by some scattered material collected from the publications of the Ministry of Food and Agriculture, have been used to estimate the quantity of cakes used as manure, the quantities being evaluated at available wholesale prices. The derivation of the output of bone has been considered in the animal husbandry sector. From some data given in the ASI, it could be estimated that about 45 p.c. of the output is used for manurial purposes. This percentage of the value, has, therefore, been taken as a cost item in agriculture. The figure for bone manure for 1948-49 is about Rs. 3 crores. Green manures

used usually are sann hemp, dhaincha, mung and sanai. We have, however, departed from the procedure adopted in the First Report and refrained from making any deduction for these on the ground that the manure crop usually escapes the acreage and outturn statistics and hence its value does not enter the total value of product as worked out by us. The entire value of urban compost sold by the municipalities has been treated as an item of deduction, but regarding the rural compost only an estimate of actual purchase from non-agriculturists has been treated as a cost item. Data on compost production have been made available by the Fertilizer Section and the office of the Compost Adviser of the Ministry of Food and Agriculture, and prices available in the ASI (March 1950) have been used for evaluation. Regarding fertilizers, we have considered the domestic production and imports of sulphate of ammonia and superphosphates and the imports of ammonium nitrate, phosphatic manures other than superphosphates and potassic and other compound manures. In every case, the available supply is regarded as a cost and has been evaluated at an estimated purchase price of the farmers. Data on the subject have been made available by the Fertilizer Section of the Ministry of Food and Agriculture and the Planning Commission. The farmers' price used for sulphate of ammonia, which is the most important of the fertilizers, is based on actual datum, but for other fertilizers the inflation of import price to cover the distribution margin is notional.

2.76. *Operational costs on materials required for cultivation*: These costs include miscellaneous materials necessary for cultivation, including all equipment with a life of less than two years and cost of maintenance of bunds, irrigation works, fencing, etc. The ICAR cost of cultivation enquiry referred to earlier does not give the data relating to these costs in a readily usable form. Gadgil's *A Survey of Farm Business in Wai Taluka* (1938) and *Economic Effects of Irrigation* (1948) give valuable information in respect of such miscellaneous costs as applying to villages in the Bombay State. *A Text Book of Punjab Agriculture* (1947) by W. Roberts also gives costs of various materials required for cultivation. The application of the rates given by these, and similar other localised studies for Punjab (Board of Economic Inquiry), Uttar Pradesh (various research dissertations), Assam, Bengal (semi-official data giving results of various surveys), etc., however, can only be of doubtful validity for the entire country. In the absence of any further information, we prepared our estimates on the basis of Gadgil's *Economic Effects of Irrigation* (1948) and *A Survey of Farm Business in Wai Taluka* (1938), which are the most penetrating of the available sources.

2.77. According to the former of these two sources, the costs itemised in the previous paragraph constitute about 1·32 p.c. of the value of crop output in irrigated areas and 2·80 p.c. in the dry areas. Weighted by the estimated value of crop from the irrigated and dry areas sown in the

country in 1948-49, the average works out at 2·1 p.c. This together with the estimated value of crop output in the country worked out by us gives a figure of Rs. 88 crores as aggregate deduction in 1948-49. An alternative estimate was prepared using the cost of materials per acre (brought upto date by using Calcutta wholesale price index number) available in the *A Survey of Farm Business in Wai Taluka* and the gross area cultivated according to our estimates. This amounted to Rs. 95 crores in 1948-49. The use of Calcutta wholesale price index renders this estimates less reliable and hence the former estimate has been preferred by us.

2.78. *Repairs and depreciation of implements, bullock-carts, etc.*: Apart from the NSS, no representative study is available on these items of expenditure. Scattered studies are available relating to the repair expenditure on implements, based on a few case studies for certain areas. The concept of depreciation on agricultural implements is almost unknown and hence very little information can be gathered even from the cultivators. The Ministry of Food and Agriculture, it is true, furnishes livestock statistics which include estimates of the total number of iron and wooden ploughs and certain other implements in the Indian Union. It is not clear, however, how far the coverage of these statistics is adequate; and they do not include any data about the other implements which form a very important part of agricultural equipment. Nor are any data of an all-India character available on the prices of the different implements in the official source. Under the circumstances, we have decided not to use this material in our estimate of depreciation costs. Further, barring the NSS, no other source gives information relating to the total value of all the implements required for cultivation. The ICAR cost of cultivation enquiry reports, although they contained some useful information regarding implements, cannot be used either for reasons mentioned earlier. Scattered information is available in various dissertations giving the results of isolated studies conducted by research workers. Gadgil's *A Survey of Farm Business in Wai Taluka* and *Economic Effects of Irrigation* and Roberts' *A Text book of Punjab Agriculture*, survey conducted by the PBEI relating to cultivation costs, various indebtedness surveys and localised enquiries, and a large number of farm studies for different parts of the country, may be considered together for some sort of estimate of the total value of agricultural implements in the country. In respect of coffee and rubber plantations, the depreciation of equipment of these industries is estimated, from the results of analysis of company accounts undertaken by the Reserve Bank of India (RBI). Some other deductions in respect of these companies are necessary for various materials consumed during the production process and these are also derived from the consolidated accounts of these companies.

2.79. In view of the position indicated above, several different approaches have been tried and the most representative estimate based on the Poona

Report of the NSS has been accepted. The different methods adopted for estimation have been outlined in some detail below:—

(i) Estimates of total value of all implements per acre are available, in a few limited enquiries by private research workers, for West Bengal (J. P. Bhattacharjee: 1945-46); Uttar Pradesh (G. D. Agarwal: 1948-49, and results of numerous research dissertions tabulated for the NIU by D. S. Chauhan: 1948-49); and Bombay (D. R. Gadgil: 1936-37 and 1937-38). Estimates for West Bengal and Bombay have been scaled up to 1948-49 level on the basis of an index of earnings of rural blacksmiths, etc., (*Indian Agricultural Wage Statistics*). The four different estimates based on sources mentioned above give fairly close results, as follows:

West Bengal (J. P. Bhattacharjee)	Rs. 22·0 per acre
U.P. (G. D. Agarwal)	Rs. 25·4 per acre
U.P. (D. S. Chauhan)	Rs. 22·0 per acre
Bombay (D. R. Gadgil)	Rs. 23·6 per acre

On the basis of estimated net cultivated area and available estimates of the cost of repair and rate of depreciation of agricultural tools and implements from a variety of sources (PBEI: Farm Accounts in the Punjab for different years; W. Roberts: *A Text Book of Punjab Agriculture*; J. B. Shukla: *Life and Labour in a Gujrat Village*; D. R. Gadgil: *Economic Effects of Irrigation*; D. R. Gadgil: *A Survey of Farm Business in Wai Taluka*; etc.,) total repair and depreciation of implements in 1948-49 works out at Rs. 98 crores.

(ii) Estimation of repairs and depreciation of implements per acre directly: On the basis of independent surveys (notably C. P. Shastri: *An Enquiry into Costs and Returns on Government Farms and Private Farms and Cultivator's Holdings in the district of Meerut in* 1948-49, unpublished Ph.D. thesis, and data culled from *Gadgil: Economic Effects of Irrigation*), the average expenditure on repairs and depreciation of implements for the net cultivated area, works out again at Rs. 98 crores in 1948-49.

(iii) On the basis of estimated repairs and depreciation of agricultural tools and implements as related to total money expenditure on seed requirement, derived from the ICAR cost of cultivation surveys for a large part of the country, the estimated repairs and depreciation of agricultural implements in 1948-49 works out at Rs. 108 crores. Since the ICAR survey gives data in a form not quite useful for present purposes, ICAR data can only be utilised to derive certain relationships between cost items assumed to be more or less stable.

(iv) Costs as percentage of gross value of output may give another such (stable) relationship. On the basis of ratios derived from some of the sources enumerated above (in particular, Gadgil: *Economic Effects of Irrigation*), the repairs and depreciation of implements in 1948-49 work out at Rs. 83 crores.

(v) The Poona report of the NSS estimates the value of all implements including carts at purchase price at Rs. 69·25 per household in 1950-51. Inflating for the entire agricultural population (in rural and urban parts of the country) we get the total value of implements, etc., amounting to about Rs. 415 crores. The cost of repairs and maintenance is taken at 20 p.c. of this figure on the basis of various sources indicated in section (i). Some small adjustment is also necessary for urban carts, the maintenance of which we attributed entirely to the 'other commerce and transport' sector. The resulting figure for 1950-51 works out at Rs. 82 crores. This figure has been carried to the other two years on the basis of our estimate of the gross cultivated area, yielding a figure of about Rs. 79 crores for 1948-49.

2.80. As we have indicated earlier, this figure is the most representative of the five figures derived. Moreover, the order of the figures derived from widely dissimilar and very largely independent material is more or less the same. We, therefore, have no hesitation in accepting the figures based on the Poona NSS report for our purpose.

2.81. *Cost of livestock required on farms*: The only worthwhile data in this connection are results of the ICAR cost of cultivation enquiry for the years 1933-34 to 1935-36, but the results of the analysis have been rendered useless by the inclusion of all sorts of imputed costs at their current market rate, and also by allocating these costs to various crops. No other data exist on the subject of cost of upkeep of livestock. Here again, therefore, it becomes necessary to adopt the indirect method of estimation, *i.e.*, to try to assess the cost of the available supply of livestock feed, and other necessary expenditures. The procedure adopted in this connection has been to consider the entire output of fodder and other feed-crops as the total available supply of cattle food, and then to allocate this cattle food to cattle required on the farm on the basis of an equivalence scale constructed in relation to a scale given by D. R. Gadgil in the *Economic Effects of Irrigation*. To the total cost of fodder, etc., some other minor cost items have to be added in respect of oilseeds and oil cakes and various other items of animal consumption. Information on these is contained in the MRs and various other technical journals and studies. Though unsatisfactory, the present procedure has the great advantage that any error in the valuation of straw, fodder, etc., would automatically get cancelled when the sectors agriculture and animal husbandry are consolidated. The sectoral totals will of course be subject to error but not the aggregate. Further, since the net output of agriculture and animal husbandry have been lumped together for purposes of our table on national income by industrial origin, sectoral totals as given in this table are unaffected by this procedure.

2.82. In this connection, it has to be clarified that only livestock feed has been deducted as a necessary deductible item in the valuation of agri-

cultural output. Thus, neither labour costs of livestock maintenance—which accrue as income to persons—nor depreciation (of livestock) has to be deducted. In connection with the latter, it has been decided to treat livestock as inventory, and only the value of net increment of the stock has been included in the net product originating in the sector. For this procedure to be valid, it is necessary to assume that the age composition of the stock remains the same in the short period under consideration. Under this procedure, only costs of production (in the present instance, livestock feed, other expenditure on medicines, etc.) have to be reckoned, and the concept of depreciation of livestock is rendered superfluous.

2.83. *Market charges*: The last deduction which we reckon relates to certain market charges in respect of the distributive activity included in the production boundary of our 'agriculture' sector. We assume that out of the flows representing sellers' cost in the market centres, a part is due to activity or service of the seller himself. Hence we deduct only half of the total cost of sellers. The relevant material for estimating sellers' cost is culled from the MRs and Kulkarni's book on agricultural marketing. This cost is inclusive of octroi, which formed our only item for deduction on this count in the First Report.

2.84. Apart from the general estimational procedure, and the modifications to the procedure adopted in the First Report, as outlined above, a major conceptual change adopted here relates to the treatment of land revenue as a direct tax, so that it is no longer a deduction on the national income.

2.85. Apart from the procedural changes in the method of estimation, an important change has been made in respect of the *ad hoc* estimate relating to non-reporting areas, not covered by data received from the Ministry of Food and Agriculture. The general basis of the *ad hoc* estimate is outlined below.

2.86. It will be recalled that in the First Report, agricultural output in non-reporting areas was estimated at 4 p.c. of output in the reporting areas on the basis of proportionate increase in output to increase in area coverage relating to the (then) non-reporting areas, as estimated by V. K. R. V. Rao in 1945. While framing estimates, however, this figure was arbitrarily scaled down to 2 p.c. on the hypothesis that non-reporting areas may get increasingly more barren. But the following analysis show that the procedure was not valid. A large part of the newly merged territories—especially the merged areas of Bombay, Orissa, Madhya Bharat, Rajasthan, Saurashtra and PEPSU—do not, or did not in 1948-49, have any land utilisation statistics. But most of these areas still had an *ad hoc* system of crop forecasts at least for the major foodgrains. It is obvious that these merged states would have other crops under cultivation, apart from the major cereals brought within the reporting ambit through *ad hoc* forecasts. The hypothetical area under these unreported (minor) crops

has been estimated for each State separately, on the basis of the ratio between the area under these (unreported) crops and (the reported) cereal crops, for the area for which village papers exist. The estimated increase in area under the unreported (minor) crops in these merged territories has been then evaluated at the average value per acre of these crops in areas for which these values have been directly estimated. For instance, the estimated area under these unreported crops in the merged states of Orissa has been evaluated at the average value per acre of these crops in the 'reporting' area in Orissa. On this basis, we get an increased output of approximately 2½ p.c. of the gross value of crop output in the Indian Union. This additional output referred to above relates only to the merged territories in States mentioned in the foregoing paragraph. Quite apart from these areas, there are totally non-reporting areas in Assam, Central India, Rajasthan, hill-tracts in North India and Kashmir, where no estimates, *ad hoc* or otherwise, are available even for major foodgrains. A large part of the geographical area of the Indian Union is still left thus uncovered. Although the population in these areas is not known, the *Census Paper No.* 2, (1952) purports to give the estimated population in 1951, in areas where village papers do not exist, and such population is found to be more than 4 p.c. of the total population. But part of this population—it is not known which part—is already covered by the *ad hoc* forecasts for foodgrains referred to above. The evidence, as indicated above, suggests that 4 p.c. would perhaps be a more plausible increase in the estimate of crop output.

2.87. Following earlier procedure, the estimate (of 4 p.c.) for non-reporting areas has been added to the net value of agricultural output, rather than to the gross value, in order to avoid the complication regarding the derivation of net value.

2.88. Some dimensional idea of the magnitudes involved may be given here. The over-all average value per acre of all crops for the entire Indian Union (say, for 1948-49) would be around Rs. 135. If we assume that the average value per acre under crop in the non-reporting areas to be half of the above figure, then the increase in the net output by 4 p.c. really means increasing the cropped area by about 20 million acres. Roughly, 200 million acres of the land area of the country is completely missed in the land utilisation statistics. Hence, our procedure involves the assumption that only about 10 p.c. of this area is, in effect, under crop. If we assume a higher average value per acre under crop for non-reporting areas, the percentage will be still smaller.

2.89. The various deductions on the gross value of agriculture, for the derivation of the net output of this sector, have been summarised in the table below. All items in this table except irrigation tax (no. 14) have already been discussed. This item has been worked out from the accounts of public authorities.

TABLE 8 : NET VALUE OF OUTPUT IN AGRICULTURE

(value in Rs. crores)

(1)	1950-51 (2)	1949-50 (3)	1948-49 (4)
1. value of agricultural output	4866	4442	4170
2. *less* adjustment for lower value of procured food-grains	−58	−36	−21
3. *less* adjustment for net output of rice milling (in factory establishments only)	−3	−4	−4
4. adjusted value of output	4805	4402	4145
deductions for netting			
5. seed requirement	254	227	216
6. market charges	22	19	17
7. dung manure	107	105	104
8. compost purchased for manuring purposes	1	1	1
9. bone manure	5	3	3
10. fertilisers	17	11	8
11. operational costs on materials (inclusive of materials required for maintenance of bunds, irrigation works, etc.)	102	93	88
12. materials used in the processing of coffee and rubber and depreciation of coffee and rubber companies	1	1	1
13. repairs and depreciation of all implements (including carts)	82	82	79
14. irrigation tax	16	15	13
15. cost of feed of livestock required on farm	244	242	227
16. net output of agriculture	3954	3603	3388
17. *add* 4 p.c. of net output for non-reporting areas	158	144	136
18. adjusted net output of agriculture	4112	3747	3524

C. *Income from animal husbandry*

2.90. The problem of the availability of data in respect of livestock sector is complicated by the fact that the net value of product arising in this sector relates to primary, secondary, as well as tertiary type of production. In order to examine the adequacy of statistics relating to this sector, it is convenient to classify livestock and livestock products into the following categories:—

A. Different kinds of livestock available in India: (1) cattle, (2) buffalo, (3) sheep, (4) goat, (5) horse, (6) mule, (7) donkey, (8) camel, (9) pig and (10) poultry.

B. Services of livestock: mainly cattle and buffalo as draught and pack animals. It may, however, be noted that apart from A(9) and A(10) all have some contribution to make in this sphere.

C. Non-edible livestock products: (1) hides and skins, (2) wool and hair, (3) blood, (4) ivory, bone, horn, tip, etc., (5) dung and fertilising services of livestock, and dung-cakes.

D. Edible livestock products (primary): (1) milk, (2) eggs, (3) meat and (4) poultry.

E. Edible livestock products (secondary): (1) ghee and lassi, (2) butter, (3) khoa, (4) icecream, (5) dahi, (6) cream, (7) chhana, khurchan and casein.

2.91. Regarding (A), the primary material on number is available in quinquennial *Livestock Censuses* (LC). The first LC was conducted in the cold weather of 1919-20. This was non-simultaneous and the coverage of States as measured by area was only about 29 p.c. The first simultaneous census was conducted in January 1930 which covered about 50 p.c. of the area. The coverages of the 1945 and 1951 LCs were 92 and 94·5 p.c. respectively.

2.92. The censuses give the number of livestock by the following categories: *Cattle*: males, females, stock under 3 years, males and females again classified into: breeding, working and others; *Sheep and Goats*: number only; *Horses and Ponies*: horses, mares, stock under one year, and other young stock, mules; *Donkeys and Camels*: number only. From 1940 onward, *Pigs and Poultry* (classified by ducks and hens): have been included. In 1945, breeding cattle have been classified into 'in milk', 'dry' and 'not calved'. Secondly, age distribution is available for young stock in respect of cattle under one year and from one to three years and sheep and goats, under one year and over one year. Moreover, counts of poultry are available by hens, cocks and chickens, and ducks, drakes and ducklings.

2.93. Census data before 1951 relate to undivided India. The brochure, *Livestock Statistics* (LS), 1950 by the Ministry of Food and Agriculture, however, gives the census data for 1940 and 1945 for the Indian Union by broad classes (*e.g.*, young stock under three years only for 1945) and the present administrative divisions.

2.94. All-India LC (1951) data are available for all States except Orissa, Didwana Tehsil of Rajasthan, and Manipur. The information collected relates to number of

(i)-(ii) Cattle and buffaloes under the heads

(a) male over 3 years (breeding, working and others)

(b) females over 3 years (in milk, dry and not-calved, working and others)

(c) young stock (3 years and under);

(iii) Sheep (one year and above, under one year);

(iv) Goats (one year and above; under one year);

(v) Horses and ponies classified as—
  (a) males over 3 years
  (b) females over 3 years
  (c) young stock (3 years and under);

(vi) Donkeys;
(vii) Mules;
(viii) Camels;
(ix) Pigs;
(x) Fowls; and
(xi) Ducks.

2.95. The quinquennial numbers of different classes of livestock enable one to calculate by a suitable graduation formula the annual numbers and the year to year increment. The increment, constitutes a part of the national product, while the annual numbers are of considerable use for the calculation of different kinds of output. Thus, if we know the quantity of a livestock product at a particular period, we can relate it to the appropriate number of livestock and this relation can be used to estimate the quantity of the product for other years.

2.96. To get the value of the increment in stock, we have used data on livestock price available in various sources. Data available in the MRs published by the DMI relate to past periods. Current price data can be culled from the monthly ASI, some other publications of the Ministry of Food and Agriculture and data given in the Poona Report of the NSS. For evaluation purposes, we have assumed that the age composition of the stock remains unchanged in the short period of three years which we have under consideration in this report.

2.97. To get an estimate of the annual value of services of livestock (measured at cost), it is necessary to have some information as to the utilization of livestock. A rough idea of utilisation can be derived from the different categories of animals given in the LC. This can be supplemented by the information given in the MR on cattle (1946), according to which out of a total of 7·1 crores of working cattle, 7·0 crores are used for cultivation and cartage in rural areas, 0·1 crore are used for carting in urban areas and only 0:04 crore are used as pack animals and also for oil crushing purposes.

2.98. Cost of upkeep of livestock can be estimated in three different ways. Firstly, the value of all goods consumed by livestock population as a whole can be calculated after allowing for the distributive margin. Secondly, average cost of upkeep per head of animal may be calculated from sample studies, and used to estimate population values. Lastly, cost of production per unit of quantity of each individual livestock product may be arrived at from sample studies and used to estimate the overall cost. Scattered material pertinent for the second and third methods are available in an issue of the *Indian Journal of Agricultural*

Economics (March, 1950) and in a few other papers; but we are unable to use these methods for making a national estimate not only because of the unrepresentative character of the available material but also because the errors involved will apply not only to the sectoral income estimates but also to the overall national estimate. We have therefore used the first method basing it on available agricultural statistics. The estimate of cost thus derived is no more than a rough approximation. In this procedure of estimation, since livestock food would largely constitute part of the gross output of agriculture, any errors in estimation will get cancelled on consolidation leaving the national totals free from error, though involving error in the sectoral estimates. The above procedure implies that for roughages, and for some concentrates (*e.g.*, rice bran), estimates of output may be taken over from the agriculture sector; there would, however, still remain the concentrates (*e.g.*, oilseeds and oilcakes) fed in small quantities to cattle, for which separate estimates have to be made. Various MRs, *Indian Oilseeds Statistics* (1950), and some other publications give information on the utilisation of different agricultural products, and these may be utilised for framing the estimates of concentrates used for cattle feed.

2.99. For the allocation of cost between livestock used for agriculture and all other livestock it is necessary to make use of an equivalence scale relating costs of different kinds of livestock. D. R. Gadgil has suggested one possible equivalence scale in his *Economic Effects of Irrigation*, and this has been used by us with some modification. It may be pointed out that any error in the scale of equivalence does not affect the net output of agriculture and livestock sectors taken together but only alters the ratio of net value of output of the two sectors.

2.100. Regarding non-edible livestock products, for hides and skins, scattered data are available in the MR on hides (1951), and the MR on skins (1943). Our estimates of output are based on material available in the MRs supplemented by material furnished by the DMI and relate to the whole of the Indian Union. Price data collected from the EACom and some of the State bulletins have been used for evaluation. Price coverage, however, is meagre and relates to only four States in the case of hides and six States in the case of skins. This leads to some possible overestimation as data in question relate to urban areas.

2.101. Estimates of quantity of wool produced are available in the *Brochure on Marketing of Wool in the Indian Union* (1948) for the Indian Union, and revised estimates of the same are available with the DMI. The data relate to 1940 and are available by States. No basis of valuation is given in the brochure, and the calculation of the value of output therefore presents difficulties. Price data for important urban centres are available but these have to be deflated to make them properly representative of the whole country. The deflator to be used can only be

arbitrary, as nothing is known about the price disparities between urban and rural areas.

2.102. All-India figures for blood, ivory, horn and tips are not available in any suitable form. Very rough estimates can be made for these items on the basis of calculation made by V.K.R.V. Rao relating to 1931-32, and some other subsequent work. Regarding bones some data on production, utilisation and prices are available in the Ministry of Food and Agriculture and have been made use of. The total contribution of this group, however, is small and possible error in its estimation is not of any great importance.

2.103. The annual production of dung (used as fuel or for manuring) has been estimated in the MR on cattle but the evacuation rates given are different from those given by Burns in the *Technological Possibilities of Agricultural Developments in India.* The MR figures are based on Wright's *Report on the Development of the Cattle and Dairy Industries of India.* Neither of above sources gives the basis of the estimate of evacuation rates cited, and on purely *a priori* ground both appear to be considerable over-estimates. An additional difficulty arises from the fact that the available supply has to be adjusted for driage, wastage, etc. A number of scattered articles in technical journals give figures of out-turn and value of dung per animal; these, however, are based on studies relating to government dairy farms and cannot be accepted as representative. These rates, therefore, need to be arbitrarily deflated before they can be used on a national scale. However, in so far as dung is used as manure, the difficulty does not affect the total national income, since dung used as manure constitutes an imputed cost of agriculture. But a substantial part of dung has a final use as fuel and hence the national income does get affected by errors in the estimation of dung yield. It is also necessary in this connection to reckon the fertilising services of sheep and goats, on which no worthwhile information is available.

2.104. Among edible livestock products, the most important is milk. According to the MR on milk, roughly 36 p.c. of the milk is consumed fluid and the rest is converted into different products. Annual production figures of milk are not available. The *Brochure on the Marketing of Milk in the Indian Union* (1949) gives the number of animals kept for milk production and the outturn of cow, buffalo and goat milk for the years 1940 and 1945. The MR on milk gives current production estimates based on 1945 census material. The data are available by the present administrative set-up of the States. The publication, LS by the Ministry of Food and Agriculture gives some price data. Some relevant price data are also available in the monthly ASI. Production and price data relating to milk products are given in MR on ghee and other milk products. The quantity of milk converted into ghee, and the ghee produced in different States in 1940 are given in this MR. Similar figures, though with fewer break-downs, are available for 1945 in the brochure on milk published in

1949. The MR on ghee and other milk products gives value of the products and also prices at different stages, and for different regions.

2.105. The production and price data as given in the MRs cited above appear to have reasonably complete coverage, and if we were certain about the reliability of the figures on production and prices of milk, a very small margin of error could have been assigned to the livestock sector as a whole. But in the absence of a regular agency for collection of data, estimates of quantities given in these reports are really an expression of the generally held opinion on the availability of livestock products rather than measures of statistical significance. A considerable measure of error must therefore be assumed in regard to the quantity data given in the MRs. Nevertheless, use has to be made of these data in the absence of any other alternative material.

2.106. Relevant material on production and prices of eggs is available by States in the MR on eggs and also in the LS. The LC (1951) gives current data on number of poultry, and may be used for estimating production in conjunction with the yield rates given by Burns. For birds not covered by the LC, the MR gives some useful information. The valuation has to be done on the basis of certain urban prices scaled down to take account of rural areas. Nothing is known about the reliability of the data; the wide divergence that exists between the figures as given in the MR and in the LC makes both the sets of figures suspect. A certain measure of error is, therefore, inevitable in the evaluation of this item.

2.107. Figures of annual slaughter of goats and sheep by States for 1940, and some average prices of mutton and goat meat are available in the MR on sheep and goats. Statistics of annual slaughter of cows and buffaloes and the relevant prices are available in the MR on cattle, also for the year 1940. Current material, however, is available with the DMI for production and prices of meat including pig meat. No material, however, is available about the production of poultry with the result this has to be estimated on the basis of the LC data. The coverage of production and price statistics for all varieties of meat is reasonably wide, but it is not known how far the figures are reliable.

2.108. It is obvious from what has been said above that the data available on livestock products are quite unsatisfactory in respect of output, prices and measures of change from year to year. Different sources (*e.g.*, LC, MRs, etc.) sometimes give different estimates of the same magnitudes for the same period. The reliability of the available estimates is unknown, and nothing can be done about preparing an estimate for non-reporting areas on the basis of data for reporting areas. In fact, the available data may be expressed as the sum of a large number of individual guesses and opinion on the number of yield of animals. Nevertheless, we are compelled to use this data for framing our estimates in the absence of any better alternative material.

2.109. The tables showing the value of output and the net value originating in the animal husbandry sector are given below.

TABLE 9 : QUANTITY AND VALUE OF LIVESTOCK PRODUCTS

	production (lakh maunds*)			value (Rs. crores)		
	1950-51	1949-50	1948-49	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. output of milk consumed as such						
(a) rural	1805.4	1768.9	1734.7	221.4	217.0	212.8
(b) urban	105.6	103.6	102.8	22.2	22.0	22.3
2. ghee	120.8	118.5	116.5	242.5	236.4	220.5
3. dahi	411.9	403.1	395.0	67.5	66.1	64.7
4. butter	19.9	19.6	19.2	32.0	31.3	29.2
5. other products	270.6	265.6	261.7	32.8	32.2	31.7
6. beef	57.9	56.9	56.0	22.1	23.4	21.2
7. buffalo meat	25.1	24.7	24.3	9.6	9.5	8.9
8. sheep meat	33.1	33.3	33.5	22.1	26.0	25.8
9. goat meat	28.2	27.5	26.9	21.8	22.1	21.5
10. pork	6.5	6.3	6.2	4.8	4.1	4.0
11. cow hides	142.1	142.1	142.1	17.2	13.9	12.9
12. buffalo hides	47.8	47.8	47.8	5.6	6.1	5.9
13. goat skins	205.7	205.8	205.9	8.1	6.5	5.4
14. sheep skins	110.7	111.0	111.2	3.9	3.8	2.3
15. eggs	105.4	103.5	101.7	10.5	8.9	8.6
16. poultry	785.0	773.0	763.0	8.1	7.9	7.8
17. bones	..	..	..	5.0	5.0	5.0
18. horns, etc.	..	..	..	5.0	5.0	5.0
19. dung						
(a) manure	572.1	561.5	553.1	107.3	105.3	103.7
(b) fuel	254.2	249.6	245.8	95.3	93.6	92.2
(c) other uses	63.7	62.3	61.5	11.9	11.7	11.5
20. wool	5.6	5.8	5.9	14.8	6.2	5.0
21. manuring services of sheep and goats	..	..	..	0.8	0.8	0.8
22. lassi (imputed)	..	..	..	44.8	45.8	58.1
23. increment in stock	37.5	37.5	37.5	67.2	61.5	61.5
total	..	..	..	1104.3	1072.1	1048.3

*Figures of production are in lakhs of pieces for hides and skins, in crores of eggs for eggs in lakhs of birds for poultry, in crores of maunds for dung and in lakhs of animals for increment in stock.

TABLE 10 : NET VALUE OF OUTPUT IN ANIMAL HUSBANDRY

(in Rs. crores)

	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)
total value of product	1104.3	1072.1	1048.3
less—			
cereals and pulses	58.1	50.2	50.7
fodder crops	52.8	55.9	54.8
rice husk	4.3	4.6	4.8
bran	28.6	30.6	18.3
stalks and straw	531.7	529.9	503.3
grass	42.6	40.1	39.2
oilcakes and oilseeds	31.1	30.0	25.6
medicine, ghee, salt, etc.	19.0	18.7	18.4
total feed cost	768.2	760.0	715.1
percentage of non-service animals	55.4	55.4	55.4
feed cost of non-service animals	—425.6	—421.0	—396.1
cost of materials and depreciation	—15.3	—15.0	—14.7
net value of livestock products	663.4	636.1	637.5
net value of hunting	0.8	0.8	0.7
grand total	664.2	636.9	638.2

2.110. We give below a description of the method used to arrive at the entries of the above tables:—

(i) In view of the difficulties mentioned earlier, only 1945 and 1951 LC data have been made use of to estimate the livestock population for 1950-51, 1949-50 and 1948-49. For States for which 1951 population figures are not available, the following procedure has been used:—

(1) for Manipur, 1945 figures have been adopted, and

(2) for Orissa, 1945 figures have been changed in proportion to change in corresponding figures in Madhya Pradesh and Madras.

For interpolation, logarithms of the numbers were used and this was done separately for different categories of livestock in each State. Female cattle and buffalo population (in milk) have been split up into urban and rural population on the basis of the corresponding figures given in the LC (1945) separately for each State.

(ii) Physical quantities of different items have been estimated as follows. Total outturn of milk from the MR on milk (based on 1945 LC) has been adjusted for change in population of cows, buffaloes and goats. The production of milk in the three years thus estimated, has been split up into milk utilised in fluid form and milk used for making ghee, dahi and butter, using percentages for each State as given in the MR on milk. The balance has been taken as used for 'other products'. Urban and rural output of milk consumed as fluid have been estimated, using the ratio of urban to rural population of animals in milk.

(iii) The estimates of outturn of meat in 1945 have been adjusted for change in population in each category in each State. Figures of production of kips and buffalo hides for 1948 are taken from the MR on hides (1951) and have been used for all the three years. Production of goat and sheep skins are taken from current unpublished records of the DMI. The production of wool given in the LS have been adjusted for change in population of goats and sheep in the three years. Similarly the production of eggs, poultry and dung have also been re-estimated.

(iv) For evaluation of output of fluid milk consumed as such in urban and rural areas in 1948-49, prices for 1947-48 given in the MR on milk have been raised by 4 p.c. on the basis of an index of rise in prices of milk during the period. The prices used for evaluating the outturn of milk in rural areas consumed in fluid form for the years 1949-50 and 1950-51 are the same as those used for 1948-49. But for the urban part, the prices for 1948-49 have been adjusted by an all-India index of milk prices prepared on the basis of prices collected from the EACom. Prices of ghee are available in the DESAg and also

in the EACom. Prices for the three years were collected for 18 centres covering 12 States and an all-India index was prepared therefrom for evaluation of ghee production. In the case of dahi, milk prices raised by 27 p.c. on the basis of information received from the NSS, have been used for all the three years. The MR on ghee and other milk products gives average price of creamery butter as 20·6 p.c. higher than the price of ghee. On this basis the total output of creamery butter, calculated with the help of some data given in the MR has been evaluated at prices 20 p.c. above ghee prices. Desi butter has, however, been evaluated at prices 20 p.c. below ghee prices, the percentage having been worked out from some information given in the MR. A value has been imputed to lassi on national basis.

(v) Meat has been evaluated on the basis of price data for a few centres collected from the DMI and the EACom. A 20 p.c. reduction has, however, been made to allow for the lower rural prices. Egg prices are available for a number of centres from the EACom. The prices of eggs at Delhi have not been considered as available quotations relate to the best (selected) quality eggs. Straight average of egg prices at all other centres has been made use of for evaluating production in 1948-49 and 1949-50. For 1950-51, fresh data collected from different issues of the ASI and State gazettes have been used after a deflation of 20 p.c. to allow for lower prices in rural areas.

(vi) Prices of kip, buffalo hide, goat and sheep skin are available in different Central and State publications and these have been made use of for evaluation purposes. Prices of wool in different States have also been collected from similar sources and used to obtain the value of product. Notional prices have been used for dung and raw bone, the former on the basis of some NSS material and a few other studies and the latter on the basis of material collected from the Ministry of Food and Agriculture.

(vii) We have already stated that the increment in stock forms part of national income and has to be evaluated. No suitable price per head of livestock is available for 1948-49 and 1949-50 and hence arbitrary prices have been used for evaluation purposes. For 1950-51, prices given in the Poona Report of the NSS have been accepted with some changes.

(viii) In order to arrive at the net value of product from animal husbandry, the total cost of upkeep of all livestock has been split up into cost of upkeep of service and non-service livestock and the latter together with cost of materials and depreciation of implements have been deducted from the total value of livestock products. The cost of upkeep of all animals has been built up from the cost of (i) grains and pulses, (ii) roughages, (iii) oilcakes, etc., fed to livestock. The amounts of grains and pulses fed have been estimated on the basis

of data available in Baljit Singh's *Population and Food Planning in India* (1947). For item (iii), 55 p.c. of groundnut oilcakes, 80 p.c. of linseed oilcakes and 60 p.c. each of coconut and cotton seed oilcakes produced are taken as fed to livestock, on the basis of information available in the *Indian Oilseeds Statistics* (1950) and scattered statements regarding livestock feed available in the MR on milk (1950) and the MRs on various oilseeds. Expenditure on medicine, ghee, salt, etc., has been arbitrarily taken at Re. 1 per cattle equivalent. The cost of materials and depreciation of implements used in animal husbandry has been evaluated at the rate of Rs. 10 per maund of ghee and butter and at 0·25 p.c. of value of output in the cases of milk, hides and skins, eggs and poultry, wool, dahi and other products.

(ix) Ratio of service to non-service cattle and buffaloes has been derived from figures given in the LS (1947-48 to 1949-50), for States for which details regarding animals kept for work are available. For young stock of cattle and buffaloes the percentage has been taken at 50 arbitrarily. On the above basis, 55·4 p.c. of total cattle equivalents has been estimated as non-service and hence 55·4 p.c. of the total cost has been deducted from the value of output of this sector to derive the net value. It may be noted here that out of the remaining 44·6 p.c. of the cost 31·8 p.c. is deductible from the output of agriculture sector and 12·8 p.c. from that of trade and transport sector for upkeep of animals required on farm, and for haulage in the two sectors respectively.

(x) Income originating in 'hunting' has been estimated by using the number of persons following this occupation obtained from the census and an arbitrary rate of earnings. This estimate has been added to the net output of the livestock sector.

D. *Income from forestry*

2.111. Most of the currently available material on forest statistics has been brought together in the *Indian Forests Statistics* (1949) published by the Ministry of Food and Agriculture. This publication contains details of the outturn and value of the major and minor forest products respectively but these relate only to forests under the Forest Department which form only about 66 p.c. of the entire forest area. Estimates for the Indian Union for 1948-49 and 1949-50 in the same pattern were made available to us by the Ministry of Food and Agriculture. Data relating to 1949-50 have subsequently been published in the January and September, 1953 issues of the ASI in a summary form. While all the above statistical material originates from the State Forest Departments, certain other estimates of area under forests originating from State Agriculture and Revenue Departments are given in the AgSt. Latest issue of the AgSt relates to 1949-50.

2.112. Acreages as given in the AgSt and in the Forest Department statistics differ materially as will be seen from the following statement.

TABLE 11 : FOREST AREA ACCORDING TO THE AGRICULTURAL STATISTICS OF INDIA AND THE FOREST DEPARTMENT STATISTICS : AVERAGE FOR 1941-49 AND 1949-50.

(in thousand acres)

States	Forest Department statistics	Agricultural Statistics of India	difference (2) minus (3)
(1)	(2)	(3)	(4)
Assam	13688	4131	9557
West Bengal	3257	1711	1546
Bihar	8970	7248	1722
Bombay	12150	9413	2737
Madhya Pradesh	26180	23608	2572
Madras	20004	13664	6340
Punjab	3030	764	2266
Uttar Pradesh	11057	7660	3397
Jammu and Kashmir	7077	949	6128
Madhya Bharat	7138	2809	4329
Rajasthan	8180	655	7525
Himachal Pradesh	2039	361	1678
Vindhya Pradesh	5018	1471	3547

2.113. The difference is mainly due to the following reasons:

(i) Data given in the Forest Department statistics relate to the entire area of the State while those in the AgSt relate only to the reporting area.

(ii) Definitions of forest adopted in the two sources are different. The Forest Department statistics include certain village and other land not covered by forests but worked by the Forest Department. Such lands are excluded in the AgSt definition of forest area.

(iii) There is some difference in the period for which returns are available in the two sources.

Forest Department returns are more comprehensive in scope and are made use of for estimation purposes.

2.114. Quantity figures for major forest products are of unknown level of accuracy even for the area for which they are available. The estimates of quantity have been presented in the table below so as to bring out the part for which data are actually available. For the part for which production data are not available, the outturn of timber per square mile is assumed to be one-third of outturn per square mile of the area

for which returns exist. The corresponding figure for fuel is assumed to be two-thirds. These fractions have been adopted arbitrarily after discussions with officials of the Forest Department and the DESAg.

TABLE 12 : OUTTURN OF MAJOR FOREST PRODUCTS

States	geographical area (thousand square miles)	forest area (thousand sq. miles)		production of timber (lakh cu. ft.) for area given in		production of fuel (lakh cu. ft.) for area given in	
		where output data available	total	col. (3)	col. (4)	col. (3)	col. (4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1948-49							
class A .	766·5	102·9	178·8	732·3	912·2	2169·7	3235·8
class B .	421·7	40·1	53·0	124·1	137·4	477·2	579·4
class C .	75·4	18·1	20·5	196·5	205·2	242·5	264·0
class D .	6·0	2·2	2·5	24·2	25·4	0·5	0·5
total .	1269·6	163·3	254·8	1077·1	1280·2	2889·9	4079·7
1949-50							
class A .	766·5	102·6	177·7	758·3	943·5	2446·8	3642·0
class B .	421·7	41·0	53·8	126·6	139·8	594·2	717·8
class C .	75·4	19·1	21·2	196·5	203·5	242·5	259·8
class D .	6·0	2·2	2·5	24·6	25·8	0·5	0·5
total .	1269·6	164·9	255·2	1106·0	1312·6	3284·0	4620·1

NOTE : (*i*) In col. (3) class B States exclude Rajasthan and class C States exclude Bilaspur.

(*ii*) Production data for class C States relate to 1949-50 for both financial years.

2.115. Regarding prices the only available data relate to some major forest products in a few selected urban areas. These, however, include transport and distribution charges while what we need is a price of forest product in the production stage. A certain measure of deflation of these prices is therefore necessary and this has been done though the basis used is not entirely satisfactory. As regards the minor forest products, we have used the estimates of value as given by the Forest Department These figures, however, are serious under-estimates partly because the unauthorised collection of these products may escape the Forest Department and partly because the Forest Department calculates the value on the basis of sale price to contractors. The aggregate Government revenue from forest products is also likely to be considerably less than the value of output of government forests.

2.116. The calculation of the contribution of the forests to national income is presented below.

TABLE 13 : NET VALUE OF OUTPUT IN FORESTRY

	1949-50	1948-49
(1)	(2)	(3)
total forest area (thousand square miles)	255.2	254.8
timber : quantity (lakh cu. ft.)	1312.6	1280.2
value (Rs. crores)	39.4	38.4
fuel : quantity (lakh cu. ft.)	4620.1	4079.7
value (Rs. crores)	23.1	20.4
minor products : value (Rs. crores)	6.5	5.0
other products : value (Rs. crores)	3.6	3.3
gross value (Rs. crores)	72.6	67.1
less 5 p.c. for depreciation and materials (Rs. crores)	—3.6	—3.4
contribution to national income (Rs. crores)	69.0	63.7

2.117. Certain comments are presented below in respect of the table given above:—

(i) It may be noted that our estimate of forest area of 256·7 sq. miles (for 1948-49) given in the First Report is very near the figures for 1948-49 and 1949-50 received from the DESAg and used for this report.

(ii) Statistics for major forest products (timber and fuel) and specified minor products are available only for area under Forest Departments. Data relate to both 1949-50 and 1948-49. Data for 1949-50, however, do not give figures for Madhya Pradesh, and figures available for Madras and Uttar Pradesh are unduly low as compared with 1948-49 figures. Hence 1948-49 estimates have been taken in these cases.

(iii) For 1948-49 timber and fuel production are evaluated respectively at Rs. 3 and Rs. 0·5 per cubic foot, prices used in the First Report being retained. The prices used are corroborated by input prices of timber and fuel used by large industries derived from the CM. In the absence of any conclusive evidence of a marked change in these prices, prices used for 1948-49 were repeated for 1949-50. For specified minor products, and all other products, the procedure adopted in the First Report has been repeated. To derive the net value, an overall deduction of 5 p.c. of gross value has been made for costs and depreciation, as against a deduction of 10 p.c. in the First Report. This revision is necessary because of overestimation of costs in our earlier estimate.

2.118. The relevant information available for the year 1950-51 relates to only a few States and hence no detailed calculation has been undertaken for this year. The net output for 1950-51 has been obtained from the figure for 1949-50 by making use of production and price index numbers constructed for forest products.

E. *Income from fishery*

2.119. Data on production, price and value of sea and fresh water fish, by producing areas, are given in the MR on fish (1951). The year to which the data relate is not indicated in the report although it is gathered from the DMI that the data relate to 1948 and may be taken to represent 1948-49.

2.120. It is mentioned in the report that figures of the quantities of fish caught are only estimates. "In the case of sea fish, these estimates have been made after taking into account (i) fish curing yard figures (ii) the approximate number of fishing boats in use (iii) the number of adult fishermen engaged in (catching) fish (iv) published and unpublished fish statistics of the Madras province (v) the imports of fresh fish into West Bengal from East Pakistan (vi) import and export figures of preserved fish and fish products in the publications issued by the Director, Commercial Intelligence (vii) figures of movement of fish by rail and (viii) figures of arrivals of fish in Municipal markets, *bunders* (ports), etc., in the principal cities. As regards fresh water fish, the estimates are mainly based on information supplied by local officers, the trade and Municipalities*".

2.121. Some current data on sea-fish are available with the Fisheries Development Adviser and the Central Marine Fisheries Research Station. The Research Station makes partial use of sample survey technique to estimate the total catch of sea-fish in the Indian Union. Data on retail price of certain varieties of fish at Calcutta and Madras are given in the ASI while similar data are available for other centres in the State Government gazettes. Prices are available only for a few selected varieties and only for a few centres. Estimates of the value added by sun-drying and salting are available with the DMI.

2.122. In view of paucity and unreliability of production data, it may be considered worthwhile to estimate the net output from the consumer expenditure end by making use of the NSS and other current household budget material. The available consumption estimate is, however, not likely to be very reliable for individual minor items.

* Report on the Marketing of Fish in the Indian Union (1951), p. 18-19.

2.123. The total value of products and the net value originating in the fishery sector are presented below.

TABLE 14 : NET VALUE OF OUTPUT IN FISHERY

(in Rs. crores)

	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)
1. value of fresh water fish sold in the markets . .	9.5	9.8	9.3
2. value of own consumption of fresh water fish by producers, etc.	6.4	6.6	6.3
3. value of total catch of fresh water fish . . .	15.9	16.4	15.6
4. value of total catch of sea fish	12.0	11.5	8.7
5. total value of product	27.9	27.9	24.3
6. *less* 5 p.c. of (5) for depreciation and cost of materials .	—1.4	—1.4	—1.2
7. net value	26.5	26.5	23.1
8. *plus* value added by salting and sun-drying . .	2.1	2.0	1.5
9. *plus* 25 p.c. of (7) for fish caught by persons other than fishermen	6.6	6.6	5.8
10. net value of fishing	35.2	35.1	30.4
11. net value of output of gatherers of chanks, pearls, seaweeds, shells, etc.	0.8	0.8	0.7
12. contribution to national income	36.0	35.9	31.1

2.124. We give below a description of the method used to arrive at the entries in the above table:—

(i) The value of output of fish is estimated separately for fresh water fish and sea-fish. Both quantity and value figures for sea-fish and the marketed part of fresh water fish for 1948-49, are taken from the MR on fish.

(ii) The percentages of total catch to marketable surplus of fresh water fish for different areas are available in the DMI. On this basis, value of fresh water fish retained by fishermen for their own use has been estimated. For sea-fish, the MR figures have been accepted without adjustment.

(iii) Operational costs and depreciation of boats, fishing equipments, etc., are estimated arbitrarily at 5 p.c. of the total value of product.

(iv) Value added by fish curing has been estimated as follows. Figures of quantity and value of fish cured, value of salt used, and value of salted fish in 1948-49 have been obtained from the DMI. Value added by fish curing has been derived from this material and added to net output of fishery.

(v) 25 p.c. of output of fresh water and sea fish has been added as contribution of subsistence fishing and angling by all classes of people other than professional fishermen. The MR does not cover this category of catch.

(vi) For 1949-50, estimates of sea-fish landed during 1949 and 1950 have been obtained from the Fisheries Development Adviser. The catch in 1948-49 has been estimated by averaging the above (weights being 3 for 1949 and 1 for 1950). Our estimate for 1950-51 has been calculated on a similar basis; the figures of the catch of sea-fish in 1950 and 1951 have, however, been obtained from the Central Marine Fisheries Research Station.

(vii) An index of prices of different varieties of fish during 1950-51 and 1949-50 (with 1948-49 as base), constructed on the basis of data collected from EACom, has been used for evaluating sea-fish for these years. The value of fresh water fish in 1950-51 and 1949-50 has been estimated by adjusting 1948-49 value for change in price, no account being taken of the movement in production for lack of data.

(viii) The figures of value added by fish curing in 1950-51 and 1949-50 have been obtained by making adjustments in the 1948-49 figure for the change in catch and price of sea-fish.

(ix) Income of gatherers of chanks, pearls, sea-shells, sea-weeds, etc., is estimated by multiplying the total number of persons engaged in these activities by the average net output per fisherman.

F. *Income from mining*

2.125. The following governmental agencies are at present engaged in collection and presentation of data on minerals:

(i) the Chief Inspector of Mines (CIM),

(ii) the Geological Survey of India (GSI),

(iii) the Indian Bureau of Mines (IBM),

(iv) the Coal Commissioner,

(v) the Department of Commercial Intelligence and Statistics (DGCIS),

(vi) the Salt Controller, and

(vii) the Petroleum Division.

The CIM is concerned with all mines under the Indian Mines Act, and so far as these mines are concerned, information on the number of mines, employment, wages and hours of work, investment and stock position in coal mines only, and quantity and value of all minerals produced is available in the *Annual Report of the Chief Inspector of Mines of India*. The GSI collects primary statistics only for mines not covered by the Indian

Mines Act, and information collected relates to quantity and value of minerals produced and daily average number of persons employed. Now that the Indian Mines Act has been extended to all class B States except Jammu and Kashmir, primary collection of data by the GSI will naturally decrease. The GSI, further, prepares consolidated statements on the quantity and value of all minerals produced in the Indian Union. The usual GSI publications are the *Records of the Geological Survey of India,* giving comprehensive all-India figures by State break-downs, and the quarterly journal, *Indian Minerals,* furnishing abridged statements. A recent mimeographed publication by the GSI gives provisional values of most of the minerals upto 1950, though not with State break-downs. The IBM obtains figures from the CIM and the GSI. However, it is expected to collect a variety of statistics when the Minerals Conservation and Development Rules (1950) under the Mines and Minerals Act, 1948, are implemented. Some of this information, such as cost of fuel and electricity used, cost of machinery and equipment and depreciation, royalties and cesses paid, and cost of operation per ton of produce will be of considerable use for national income estimation. The Coal Commissioner is concerned with the preparation of coal distribution statistics. The DGCIS compiles the annual Coal Statistics. The Salt Controller is concerned with statistics of production and stock of salt Lastly, the Petroleum Division of the Ministry of Commerce and Industry prepares statistics of output, consumption and distribution of petrol and petroleum products; these figures are, however, treated as confidential.

2.126. The coverage of the available statistics in respect of minerals may be examined by comparing the present GSI list of minerals with one given by Fox in the *Mineral Wealth of India* (*Records of the Geological Survey of India,* Vol. 76, 1942). The number of minerals cited there is considerably less than the number for which data are currently available. For a few isolated minerals for which no data are now available, careful examination reveals (i) that the order of magnitude of their contribution is insignificant, and (ii) that most of these are no longer available in the Indian Union. The GSI data are thus reasonably complete in coverage. One notable exception to the above is mica, for which the GSI value figures are much lower than the value of mica exports, and hence it is necessary to adopt some other basis of estimation. Thus the quantum of exports may be taken to indicate the lower limit of production (assuming no changes in the inventory) and this may be evaluated at production prices obtained from the GSI. We have followed this procedure for estimating the value of mica.

2.127. A comparison of production figures for the year 1944 in respect of British India shows considerable discrepancy between alternative estimates given by the CIM and the GSI. For example, production of clay is shown as about 4000 tons in the former and 6 lakhs of tons in the

latter. If the CIM is the collecting agency, there should not be any discrepancy except in so far as the GSI covers mines not covered by the Indian Mines Act even within provinces. That this is probably the case is confirmed by the fact that the GSI figures of output of minerals are consistently higher than the CIM figures. To cite another example, the value of salt given by the Salt Controller is considerably higher than that given by the GSI. An analysis shows that this is mainly, though not entirely, due to the use of a higher price by the former. Similar discrepancies also exist in respect of coal, petroleum and kerosene and have been touched upon in the *Report of the Sub-Committee on Statistical Material.*

2.128. The calculation of the contribution of the mining sector to national income is presented below.

TABLE 15 : NET VALUE OF OUTPUT IN MINING

(in Rs. crores)

(1)	1950 (2)	1949 (3)	1948 (4)
1. value of output—			
(a) building materials	4.1	3.0	3.2
(b) coal	46.7	47.7	45.2
(c) copper ore and corrundum	1.2	1.2	0.8
(d) gold	5.9	5.0	5.4
(e) iron ore	1.5	1.3	1.0
(f) manganese ore	8.5	3.9	1.8
(g) mica	6.6	4.1	4.4
(h) salt	4.5	4.1	4.4
(i) others	4.3	3.4	2.5
2. total	83.3	73.7	68.7
3. deductions—			
(i) cost of materials (at 5 p. c. of the value of output)	4.2	3.7	3.4
(ii) coal used in coal mines (at 6.4 p.c. of the value of coal)	3.0	3.1	2.9
(iii) depreciation (at 4.7 p.c. of the value of output)	3.9	3.5	3.2
4. net value of output	72.2	63.4	59.2

2.129. The following notes describe certain main features of the method of calculation:—

(i) As no estimate of production is available, the value of manganese ore exported is assumed to be the value of production. For the rest of minerals, the values are at pit-head price.

(ii) The entire material used for 1948 relates to 1948. In the later years, when current values are not available for all the individual minerals, figures for the previous years have been used in certain cases. Thus for example, for 1949, current data cover Rs. 73·7 crores, while the value of minerals based on 1948 material is Rs. 0·03 crores. The corresponding figures for 1950 are Rs. 85·7 and Rs. 0·1 crores respectively.

(iii) The value of coal consumed in coal mines has been worked out on the basis of material available in the *Report of the Advisory Planning Board.*

(iv) Depreciation at 4·7 p.c. of sales (value of output) has been calculated on the basis of balance sheet analysis of 70 coal mines, 7 mica mines, 2 manganese mines and 15 other mines for 1947 conducted by the RBI.

G. *Income from factory establishments*

2.130. This is one of the sectors where the collection of statistics is facilitated by the comparatively better organised character of the producing units. Until recently, statistics relating to factory establishments have largely been the off shoot of labour legislation and labour welfare policy, and for a limited number of industries, of tariff and commercial policy. Requirements of basic production data during war led to the collection of a variety of new statistical material relating to this sector. We might consider here the availability of statistics of factory industries in the light of employment and earnings data, data on quantum of output, and finally, data on the value of output and deductible costs of production.

2.131. The availability of employment statistics has been discussed earlier, in section A. Data on average wages in different industries are compiled from annual returns collected by regional chief inspectors of factories under the Payment of Wages Act. These are based on the wage bills of factories and do not give any information regarding earnings in individual occupations. Moreover the term 'worker' as defined under the Payment of Wages Act applies to all factory employees including clerical and supervisory staff whose monthly earnings are below Rs. 200. 'Wages', as defined under the Payment of Wages Act, include, besides the basic wage and dearness allowance, all remuneration capable of being expressed in terms of money. The definition, however, is not always clearly understood by those making the returns and there is thus no uniformity in the scope of the statistics furnished by the different States. Some include bonuses and the money value of concessions in kind, *e.g.*, grain sold at concessional rates, while others do not. Data on average earnings in all perennial factory industries, based on returns under the Payment of Wages Act, are published in the ILYb and the latest data

relate to 1950. In the case of class B States, no earnings data are available.

2.132. One way of estimating the income from factory industries could be by getting the earnings bill and then making additions for other factor payments such as interest, profit, etc. These latter can be estimated from balance sheets of joint stock companies available with the Registrars of joint stock companies. The Research and Statistics Department of the RBI analysed the balance sheets of joint stock companies for 1947. The analysis suffers from the defect that the samples adopted were not strictly random; further, no information is available for quite a few industries. Moreover, it is well-known that company balance sheets often do not give a correct picture of company finances, and not only are there large payments to private limited companies owned by the directors or managing agents of the joint stock companies, there are also large items given as miscellaneous expenditure, which take away a good deal of the validity of any income payments analysis based on company balance sheets and profit and loss accounts. It may be added that as regards coverage, there has been considerable improvement in the recent work on analysis of company accounts by the RBI.

2.133. For framing estimates from the output side for 1949-50 and 1950-51 two sets of data are available, namely, those given by the CM and the SSMI. The preliminary results (provisional) of the CM for 29 industries for the years 1949 and 1950 are published in a number of issues of the *Monthly Statistics of the Production of Selected Industries of India*. The CM for 1949 covers 6257 out of 6753 registered factories under these industrial classes. In terms of geographical area covered, it includes all States of the Indian Union except the Andaman and Nicobar Islands, Bhopal, Bilaspur, Cooch Behar, Coorg, Hyderabad, Jammu and Kashmir, Kutch, Madhya Bharat, Manipur, Mysore, Rajasthan, Saurashtra, Travancore-Cochin and Tripura. Except for Hyderabad and Mysore, the number of factories in the States not covered by the CM is small. In the CM for 1950, returns were received from 6323 out of 7098 registered factories.

2.134. The CM is confined to factories which come within the purview of section 2j of the Factories Act, 1934. These are factories which employ 20 or more workers in any of the days in the year and carry on manufacturing process with the aid of power. The census gives information under the following heads: (a) fixed capital: land and buildings, plant and machinery, others; (b) inventory: raw materials, fuels, etc., finished products; (c) employment: number of employees including wage earners and salary earners, average number of days worked and number of man-hours; (d) wages and salaries: wages, salaries and non-cash benefits; (e) value of materials consumed: raw materials, chemicals, packing materials, etc., fuels, electricity, work done by others, other costs, depreciation; (f) value of products: aggregate value of products, work

done for others and (g) value added by manufacture, *i.e.*, (f)-(e). The contribution to national income is represented by the value added by manufacture less certain deductions for miscellaneous office expenditure on stationery, postage, etc., insurance premiums paid, and certain imputed bank charges considered in section I of this chapter.

2.135. To get estimates for the industries not covered by the CM and to get over the time lag in the publication of its results, it was decided to conduct a quick survey of manufacturing industries by the method of random sampling. The survey was confined to factories employing 20 or more persons and using power. The sample was stratified with reference to industry, size of factory and region. Industries were classified under 71 heads; some of the more composite heads given in the CM were split up to make them more homogeneous. For instance, cotton textile was divided into spinning mills, composite mills and power looms. Similarly sugar industry was split up into vacuum pan factories, gur and jaggery refineries and gur factories; vegetable oil industry into oil mills and hydrogenated oil factories; engineering industry into repair workshops and manufacturing units; and iron and steel and non-ferrous metals industries into primary producers and re-rolling mills. Of the 71 heads, two, namely railway workshops, repair shops and locomotive shops, and arms and ammunition and explosives, have been excluded from the survey. For conduct of the survey, enterprises were stratified with reference to industry-class, size of unit and geographical position. The number of strata so formed is as follows:—

basis of stratification	number of strata
(a) industry	69
(b) industry and size of factory	326
(c) industry, size of factory and region	686

From each of the 686 strata, factories were drawn at random, the number from each stratum being proportionate to the number of workers employed by all factories in that stratum. Thus 1843 factories were included in the sample. Information collected included capital and labour employed, wages paid, input and output.

2.136. Quite apart from the CM and the SSMI, which give data in a form readily usable for national income estimation, estimates of quantum of production are available in the *Monthly Statistics of Production of the Selected Industries of India*. The Monthly Statistics, published by the DIS, is based on voluntary returns furnished by various industries. Estimates of output for certain individual industries are independently available. For example, revenue and appropriation accounts of all electricity generating companies, giving the gross sale value of all electricty generated *less* fuel and lubricants used *less* depreciation, are

available with the Electricity Division of the Central Water and Power Commission (formerly the Central Electricity Commission). For the film (cinematograph) industry, which has for the present purposes of national income estimation been treated with factory establishments, useful information on the production (as also the distribution) of films is given in the *Report of the Film Enquiry Committee*, the *Hand Book of Indian Film Industry* and the *Journal of Film Industry* (September 1950). Estimates of quantum and value of output, cost of raw materials and various other expenses of manufacturing (though not necessarily valid from the point of view of national income accounting) are also available in various reports of the Indian Tariff Board. But most of these reports relate to 1946 or 1947. Similarly several panels of the Advisory Planning Board produced reports on individual industries but the data given in these reports are not current.

2.137. Table 16 below gives the values added by different manufacturing industries and is succeeded by table 17 which gives the calculations for estimating the net income originating in the sector.

TABLE 16: VALUE ADDED BY MANUFACTURING INDUSTRIES

(in Rs. crores)

industry (1)	1950 (2)	1949 (3)
cotton textiles	107.9	136.5
tea manufacturing	69.3	57.8
jute textiles	46.6	35.2
sugar	35.8	30.7
general engineering and electrical engineering	29.4	27.2
iron and steel	26.9	28.7
chemicals	14.0	11.9
vegetable oils	11.7	6.8
tobacco products	10.5	10.2
rubber and rubber manufacturing	10.1	8.5
printing and book-binding	9.7	15.1
cement	8.5	5.5
aluminium, copper and brass	7.6	6.0
automobiles and coach building	7.4	10.4
paper and paper board	6.6	5.5
others	111.4	102.6
total (all industries)	513.4	498.6

Source: SSMI

TABLE 17 : NET VALUE OF OUTPUT OF FACTORY ESTABLISHMENTS

(in Rs. crores)

	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)
value added from the SSMI except for electricity generation and transmission	574·43	562.42	570.63
less depreciation	—33.89	—33.18	—33.67
less deductions for operational costs	—2.87	—2.81	—2.85
net output	537·67	526.43	534.11
income from electricity generation and transmission .	21.44	20.83	16.46
income from raw film industry	6.00	6.00	6.00
less imputed deduction for bank charges . . .	—4.85	—4.13	—3.91
less deductions for insurance premium	—5.88	—5.75	—5.24
net output of factory establishments	554·38	543·38	547·42

2.138. Some of the important features of the method of calculation used are given below:—

(i) The estimation of net value of output of manufacturing industries is based upon the SSMI. For 1949-50 and 1950-51, the SSMI estimates for 1949 and 1950 respectively have been used. The SSMI gives no estimate of depreciation. Hence, an estimate of depreciation has been worked out from the CM for 29 industry groups on the basis of ratio of depreciation to gross value added. Certain minor operational costs have not been allowed for in the SSMI. An allowance for these has been arbitrarily* fixed at one-half p.c. of the value added. Imputed bank charges and a portion of premium receipts of fire and miscellaneous insurance companies have also been deducted. Calculation of these items has been explained in section I of this chapter.

(ii) The SSMI estimates of net output of factory establishments have been adjusted on three counts: (a) for electricity generation and transmission (b) for film industry and (c) for input of raw cotton in the cotton textile industry. Accounts of all electricity companies have been received from the Power Wing of the Central Water and Power Commission.† As coverage of these data is more or less

* Based upon some scattered information available in the Tariff Board reports.

† Data are broadly given (without all break-downs) in the *Public Electricity Supply, All India Statistics* (1951).

complete, these were substituted for the sample estimates for this industry. For film industry, which is not included in the SSMI, estimate as given in the First Report has been repeated. For cotton textile, inputs of raw cotton as estimated in the SSMI for 1949 and 1950 give obviously inconsistent results; input of raw cotton is estimated at 63 lakhs of bales in 1949 and 38 lakhs of bales in 1950, *i.e.*, a drop of about 40 p.c. in the input of the industry. Moreover, the price per bale in 1950 is abnormally high in comparison with 1949 prices. On the other hand, the total value of input of raw cotton and output of cloth given are more or less the same in the two years. The total availability of stock and the requirement of the raw cotton have, therefore, been taken from the *Bombay Cotton Annual* (1951-52), which gives figures comparable with those given in the *Indian Cotton Industry* (Annual) (1951). Evaluation has been done at the weighted average price per bale used in the agriculture sector. The value added by this industry has been adjusted by substituting this value of input of raw cotton for the value as estimated by the SSMI.

(iii) The SSMI estimates have been preferred to the CM estimates for two reasons. Firstly, the SSMI estimates have a much wider coverage and secondly the CM is subject to non-response from more than 7 p.c. of factories on an overall basis. It has been found that the CM data, when adjusted for undercoverage, compare favourably with the SSMI figures.

(iv) It may be pointed out that the SSMI estimates are not available for 1948-49. However, the CM for 1948 has not been used for this year in order to retain strict comparability of the three years' estimates. Hence, the net output of factory establishments for 1948-49 has been estimated by adjusting figures relating to 1949-50 by appropriate production and price indices.

(v) Since 1948-49 estimates have been derived merely by adjusting by production and price indices, all deductions and adjustments necessary for 1948-49 have been avoided by taking the SSMI 1949-50 estimates after all such adjustments. However, income from electricity generation and film industry, imputed deductions for banking services, and payments of insurance premiums have been worked out separately.

(vi) It is to be noted that the coverage of factory establishments sector is now restricted to only 2j factories. The procedure of covering notified 5(1) factories on the basis of the LB employment data as adopted in our First Report has now been abandoned and these factories, now automatically fall in the 'small enterprises' sector.

H. *Income from small enterprises*

2.139. From the point of view of national income estimation, this is one of the most difficult sectors, and comes a close second to the 'other commerce and transport' sector, in respect of intrinsic difficulties of estimation and non-availability of data. The importance of this sector in the national economy cannot be gainsaid; next to agriculture and trade, small enterprises constitute the most important sector in respect of income generated, while from the standpoint of number of persons involved, this sector comes next only to agriculture. The problem of estimation in this sector is complicated by the unorganised character of production and by the fact that a large part of such enterprise is carried on in the household.

2.140. The only statistics relating to this sector, available for the entire country relate to the census occupation tables which give the total number of persons occupied in 'industry'. By a process of subtraction of factory employment from this total, we have framed estimates of the number of persons engaged in small enterprises. But this procedure does not allow for unemployment.

2.141. The estimated number of gainfully occupied persons in the census sub-clause 'industry' in 1950-51 is slightly more than 14 millions, out of which only 3 millions work in factory establishments and the remaining 11 millions in small enterprises. The next step is to find the average income of these 11 million gainfully occupied persons, and also the gross and net value of output per head. For this purpose we have got a fairly wide collection of case studies, and some localised sample surveys on which to frame estimates. In many case, however, the data do not relate to the period under review and it becomes necessary to adjust these figures on some arbitrary basis. Thus, when we have data on average earnings for an earlier period, we have inflated it by an index that has been calculated on the basis of rise in average earnings of the factory workers during the corresponding period. Further, value of production and the costs per head have been adjusted by general wholesale price index numbers, and index numbers for finished products and raw materials depending on the nature of the enterprise. The practical difficulty in this connection arises in the choice of indices. Since the index used by us generally relates to products of factory industries, and earnings in factory industries, they may not reflect accurately trends relevant for the small enterprises sector.

2.142. Another difficulty that arises in putting the data together is that in certain cases, income data relate to days, or weeks, or months. To convert these into annual earnings, the multipliers used have been respectively 300, 52 and 12. As average number of working days per year is not accurately known for small scale industries, this procedure may introduce considerable error in the annual earnings or output estimates.

2.143. It is not possible to outline the data available for each industry or for each State; suffice it to mention here that earnings data relate to all the States excepting Vindhya Pradesh, Sikkim and the Bay Islands, while data on gross output and cost relate to Bengal, Bombay, Madras, Uttar Pradesh, Mysore, Hyderabad, Madhya Bharat and Coorg. This does not mean that information is available for all industries in the above States; data in respect of some industries are available in most of the above States while for other industries, the coverage is considerably smaller.

2.144. Data given in the sources used, vary in respect of reliability and coverage. On the one hand, we have the Aligarh-Harduaganj Survey giving statistically sound estimates for industries in Aligarh and its environs, the material being generally of the nature of a census of small manufactures. On the other hand, we have got isolated case-studies of typical units of a particular industry in a State. Some of the above sources give an idea of only the average earnings of workers in a particular industry while, in other cases, the economics of the industry is studied in some detail, giving the gross value of produce, the various costs items and the distributive margins involved. Particular reference may be made here to some publications which give fairly useful data for income estimation. The first is the *Report of the Fact-Finding Committee (Handloom and Mills)*. This publication gives estimates of value of output of textile products and furnishes copious data on the economy of the industry in the shape of cost ratios to value generated. This enables independent estimation based on the income and output methods for the cotton textile industry, and the two methods give very close estimates. Secondly, *Rural Problems in Madras—Monograph* by S. Y. Krishnaswamy gives an account of almost all industries in Madras on a case-study basis. The importance of this source arises from the variety of industries covered and the detailed examination made in respect of costs, inputs, distributive charges, etc., in relation to output. S. K. Iyenger's *Rural Economic Enquiries in Hyderabad State* (1951) also gives much useful data. The *Development of Industries in U.P.* (1949) prepared by the Uttar Pradesh Directorate of Cottage Industries, gives some recent material on the pattern or structure of several of the cottage industries in Uttar Pradesh. The various reports of the Labour Investigation Committee also give useful data on a number of industries though these data are not of a readily usable nature for estimation purposes. Finally, Chitra and Tekumalla's *Cottage Industries in India*, though not useful for estimational purposes, gives a good descriptive account of various cottage industries of India. Mention should be made of the report on rural and cottage industries by the National Planning Committee which serves a purpose similar to one by Chitra and Tekumalla's book.

2.145. Calculations leading to income originating in the small enterprises sector are presented in the table below.

TABLE 18 : INCOME FROM SMALL ENTERPRISES

industrial groups	1950-51			1949-50			1948-49		
	number of persons engaged (thousand)	per head earning (Rs.)	total earnings (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total earnings (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total earnings (Rs. crores)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. textile including tailoring	3,246	553	179	3,144	554	174	3,137	543	170
2. leather, its products and footwear	763	781	60	760	782	59	759	767	58
3. wood, glass, ceramics, building and construction.	4,225	707	299	4,153	708	294	4,084	693	283
4. metal manufacturing and engineering	1,066	827	88	1,053	828	87	1,045	812	85
5. chemicals	81	617	5	76	617	5	76	604	5
6. food, drink and tobacco	1,492	542	81	1,485	542	81	1,479	532	79
7. other industries	648	731	47	652	730	48	650	715	46
8. all groups : total	11,521	659	759	11,323	660	748	11,230	647	726
9. allowance for other factor payments	..	..	152	..	..	150	..	..	145
total income	..	..	911	..	..	898	..	..	871

2.146. The following paragraphs describe certain main features of the method of calculation:—

(i) Regarding the estimates of average earnings, considerable improvement has been achieved in representativeness, as compared to the First Report. Data available relate to all class A and class B States and most of the class C States and cover 28 out of 36 census sub-divisions. Total number of observations are of the order of six hundred.

(ii) The procedure of subdividing industries into three major categories. (namely, factory type; intermediate type; and purely cottage type) as adopted in the First Report has been abandoned. Income, now, is estimated for all the 36 census sub-divisions separately, using earning figures in similar industries wherever actual figures of earnings are not available. The results are summarised by grouping these 36 sub-divisions into seven broad industrial groups and are presented in table 18.

(iii) Net earnings of workers engaged in the 36 census sub-divisions work out at Rs. 726 crores in 1948-49. Making allowance for all other factor payments at the rate of 20 p.c. of workers' total earnings, total net income in the sector during 1948-49 is estimate at Rs. 8·7 abja. For 1949-50, to the extent current data are not available, average earnings per worker in 1948-49 have been inflated in relation to the rate of increase in factory workers' earnings. Net earnings for 1949-50 thus work out at Rs. 748 crores, and total income is estimated at Rs. 9·0 abja. The corresponding figures for 1950-51 are Rs. 759 crores and Rs. 9·1 abja.

(iv) The above estimates have been checked by estimates based on the product approach. Besides the data used in the First Report, data given in D. R. Gadgil's *Poona: A Socio Economic Survey*, 1938-39, the *Rural Economic Enquiries in the Hyderabad State, 1949-51* and various issues of the *Journal of Industry and Trade* have been made use of for this purpose. Revised analysis of gross value of output per worker rests on data relating to 26 census sub-divisions, the number of observations being about 250. For netting, number of observations now is 110 in respect of about 20 census sub-divisions.

(v) Revised estimates of average gross value of output per person engaged and percentage deductions (for netting) adopted for 1948-49 are given below by seven broad industrial groups.

TABLE 19 : VALUE OF OUTPUT PER WORKER AND PERCENTAGE COST

industrial groups	value of output per worker	percentage deductions for cost
(1)	(2)	(3)
1. textile, etc.	1,425	48.40
2. leather, etc.	1,575	63.18
3. wood, etc.	1,750	45.32
4. metal manufacturing, etc.	2,350	61.65
5. chemicals	2450	61.14
food, drink and tobacco	1,775	62.59
7. other industries	1,450	36.51

(vi) The value of output per worker for 1949-50 works out at Rs. 1384, 1668, 1757, 2392, 2599, 1814 and 1449 respectively for the seven broad industrial groups and the average value of output works out at Rs. 1702 per worker for the same year. The same procedure has been followed to get the value of product in 1950-51. The ratio of costs to value of product is conceived as invariant in the period under consideration and has been used to derive the net output in all the years.

(vii) The value of net output for 1948-49 obtained in this fashion is only Rs. 54 crores above the estimate obtained by the income approach. The corresponding difference in 1949-50 is Rs. 37 crores and a difference of Rs. 80 crores is observed in 1950-51. While from the overall levels, there is very little difference between the two sets of estimates, we have thought it proper to use the estimate based on the income approach because of its wider empirical base.

I. *Income from banks and insurance*

2.147. This sector covers banks, co-operative societies, and insurance companies. For banks, available statistical material is fairly systematic and reasonably complete in coverage. The *Statistical Tables relating to Banks in India,* published annually by the RBI gives statistics relating to the RBI, exchange banks, and Indian scheduled and non-scheduled banks. The *Annual Report on the Trend and Progress of Banking in India* (published for the first time for the year ended 31st December, 1949) again brought out by the RBI supplements the above, and is extremely useful from the point of view of national income accounting in as much as the nature of bank advances and deposits are analysed. The *Statistical Statements relating to the Co-operative Movements in India,* the latest available being for 1950-51,supplements the banking statistics by giving statistics of co-operative societies and banks. Finally, *The Indian Insurance Year Book,* published annually, gives useful data relating to Indian and foreign insurance companies operating in India.

2.148. In spite of the organised character of this sector, and the wealth of statistical material outlined above, a few limitations of these data from

the point of view of national income accounting make for some gaps in these statistics. The SA (1950) gives the paid-up capital of joint stock banking and loan companies at Rs. 59·6 crores for 1948-49. The *Statistical Tables relating to Banks in India*, on the other hand gives a figure of only Rs. 45·6 crores in 1948. It follows, therefore, that the latter publication does not cover all corporate banking and loan institutions in the country. Careful analysis reveals that the gap is due to the omission in the RBI data of loan companies, investment trusts, nidhis and chit associations. This omission is perfectly valid from the point of view of banking statistics published by the RBI but from the point of view of national income estimation, the omission leaves a gap, which needs attention.

2.149. Among other difficulties in using these statistics, one may cite the availability of data for calendar rather than for fiscal years, the analysis of ownership of bank deposits at a point of time rather than the average ownership throughout the year, the mixing up of banking and insurance accounts between India and Pakistan, in respect of institutions having branches carrying on business in Pakistan, lack of clear-out analysis of activities of exchange banks, etc. Most of the above difficulties are largely academic in as much as the error due to all these defects would be small.

2.150. The above data are, however, still inadequate for purposes of national income estimation, as the nature of banking activities necessitates a circular estimational procedure, involving imputation of income on the basis of bank (and insurance) accounts. This gap is filled up by a sample analysis of balance sheets and profit and loss accounts of banking companies, carried on by the Department of Research and Statistics of the RBI. In respect of insurance companies, *The Indian Insurance Year Book* gives accounts of these companies, although details of 'expenses of management' are not always specified so that allocations have sometimes to be made between wages and salaries (which constitute expenses for the firm but 'income generated' within the sector from the point of view of national income estimation) and commodities purchased.

2.151. Since banking and insurance statistics relate to calendar rather than to fiscal years, the only adjustment possible is to take averages for two succeeding years, with weights of 9 and 3 respectively. We have not, however, done this. Instead we have accepted the 1948 figures for 1948-49 without any adjustment; similarly our figures given for 1949-50 and 1950-51 actually relate to 1949 and 1950 respectively.

2.152. The net product from banking services has been evaluated using the same procedure as described in the First Report. Balance sheets and profit and loss accounts of 611 scheduled and non-scheduled banks for 1948, for 538 banks in 1949 and for 499 banks in 1950 have been analysed by the RBI. Operating and appropriation accounts are set up from these returns. Wages and salaries, directors' fees and surplus have been taken over as

net product of banks. These items have been estimated for remaining Indian banks not covered by the RBI analysis on the basis of paid-up capital ratios for the respective years. Income originating in banks is given in the table below.

TABLE 20 : INCOME FROM BANKS

(in Rs. crores)

(1)	1950-51 (2)	1949-50 (3)	1948-49 (4)
wages and salaries	25.89	22.77	18.75
directors' fees	0.17	0.13	0.17
surplus of all banks except the RBI	10.23	10.39	9.42
Total .	36.29	33.29	28.34

2.153. A slightly modified method has been adopted for the calculation of imputed deduction for banking services. Net investment income of all banks except exchange banks and the RBI has been distributed among different depositors such as factory establishments, other commerce and transport, mining, etc., on the basis of demand deposits*. As the major share of deposits of plantations is from tea plantations, imputed deductions in respect of all plantations have been made from the net output of the sector factory establishments which include tea manufacturing. The entire net investment income of exchange banks has been deducted from the sector, other commerce and transport. It may be pointed out that the imputed deduction in the other commerce and transport sector is necessary only when the net output is calculated by the product approach. These deductions do not cover the whole of banks' investment income, a part being attributable to personal and some other depositors for which no deduction is necessary. In respect of mining sector, the imputed deductions for banking services necessary are taken to be included in the block deduction made there for netting. The imputed deductions for banking services necessary for our purpose are presented below.

TABLE 21 : IMPUTED DEDUCTION FOR BANKING SERVICES

(in Rs. crores)

	1950-51	1949-50	1948-49
1. factory establishments	4.85	4.13	3.91
2. other commerce and transport	19.31	18.57	12.95

2.154. The method adopted for insurance is exactly the same as that described in the First Report. An estimated deduction of depreciation at 2·5 p.c. on the total value of property is made from the total of wages and salaries plus operating surplus to get the net contribution of insurance companies. The net product of insurance companies works out at Rs. 22·85, Rs. 22·65 and Rs. 19·63 crores respectively in 1950, 1949 and 1948. The

* Source : *Statistical Tables Relating to Banks in India* (1950).

calculation of deductions for insurance premiums has been slightly modified in the sense that premiums paid to non-Indian fire and miscellaneous companies have also been included now. Moreover, a 10 p.c. deduction has been made in the first instance to cover the premium payments of persons. Imputed deductions to the extent of investment income of insurance companies have not been attempted as the orders of magnitude involved are very small. In any case, at least for life companies, no deduction in productive sectors is necessary as the policy holders are generally persons. The deductions for insurance premiums obtained from the insurance data and made use of for netting in other sectors, are given in table 22. It may be noted that as in the case of banks no deduction in this respect has been separately made in the mining sector. Deduction in the other commerce and transport sector is made only in the case of product approach. Further, no deduction has been made in the case of banking and insurance sector in respect of fire and miscellaneous premiums as the operating surplus of these sectors have been calculated net of these payments.

TABLE 22 : DEDUCTION FOR INSURANCE PREMIUMS

(in Rs. crores)

	1950-51	1949-50	1948-49
1. factory establishments	5·88	5·75	5·24
2. other commerce and transport	3·69	3·61	3·30

2.155. In the case of co-operative societies, the method adopted in the First Report has been repeated. All the non-credit societies have been left out because they automatically get included in various productive sectors. Regarding the credit societies, wages and salaries (estimated at 90 p.c. of the cost of management) and surplus have been taken as contribution to national income. The total works out at Rs. 5·98 crores in 1950, Rs. 5·73 crores in 1949 and Rs. 4·47 crores in 1948. To the extent the depositors (and share-holders) of these societies are either final consumers, or enterprises in which we have applied the income approach for income estimation, it is not necessary to impute any charge in respect of the net investment income of the societies. If, however, a depositor happens to be a productive enterprise where we have estimated the income by the product approach, a deduction becomes necessary on this count. We have done this only in the case of agriculture, for which the net investment income of agricultural credit societies has been treated as a business cost. This has been lumped up with the market charges on the supposition that co-operative credit is mostly required at the marketing stage. As the orders of magnitude involved are very small, we have not attempted such deductions in other sectors. This, of course, means that we overestimate the total national income to this extent.

2.156. The contribution to national income by the sector as a whole is given in the following table.

TABLE 23 : CONTRIBUTION TO NATIONAL INCOME FROM BANKS AND INSURANCE

(in Rs. crores)

	1950	1949	1948
(1)	(2)	(3)	(4)
banks	36.29	33.29	28.34
insurance	22.85	22.65	19.63
co-operative societies	5.98	5.73	4.47
total	65.12	61.67	52.44

J. *Income from 'other commerce and transport' sector*

2.157. The available material for estimating the net value added by trade and transportation is extremely limited and does not permit of a satisfactory estimation of the value generated in this sector. A variety of material is available on certain sections of the sector relating to the more organised part of trade and particularly transport, but such material does not enable any assessment of the total volume of trade in the country. The published material on the total volume of internal trade consists of a book by K. T. Shah on trade, transport and tariffs and the reports of the Sub-Committees on trade and on transport in the National Planning Committee series (1947) edited by K. T. Shah. The estimates of the total volume of internal trade presented in these have not been derived on any scientific basis and give merely the impressions of different writers on the total volume of trade in the country.

2.158. Statistics of rail and river borne trade and postal freight are available with the DGCIS. These relate only to a small part of the total trade of the country. For the purposes of these statistics, India has been divided into 22 trade blocks; and figures relate only to about 50 articles carried by rail or by river between the trade blocks. For 1948-49, the total value of such trade amounts to about Rs. 1,100 crores. This figure of Rs. 1,100 crores does not include either rail or river borne trade within each block or trade in other articles and is thus a gross under-estimate in respect of the total value of even the rail and river borne trade. Trade carried on by bullock carts and other forms of trade have also to be accounted for. An additional point that has to be remembered in the context is that the figure mentioned above relates only to the value of the transported commodities and not to the turnover or to the value of actual sales which will obviously include several stages from wholesaler to consumer.

2.159. A pilot survey of retail trade in Delhi initiated by the Ministry of Commerce and Industry puts the annual turnover of retail trade at roughly Rs. 13 crores per annum for the Delhi area. No detailed results have been worked out from this survey. A pilot survey is being conducted for all the municipalities in Uttar Pradesh also. This survey is designed to give the number of employees by trade groups and the total turnover; no questions are at present being asked in respect of the profit margin. Even an estimate of total turnover, however, is not possible from the results available so far, as the survey covers only retail trade leaving out wholesale distribution from its ambit.

2.160. In respect of foreign trade, a considerable amount of information is available and the total volume and value of trade can be deduced from foreign trade statistics as furnished by the DGCIS on the basis of data collected for customs duty. The existence of exchange control as also control over the import and export of a variety of commodities makes it possible to estimate the profit margins on such trade, but it is difficult to isolate these margins from the profits accruing from internal trade.

2.161. Trade margins on a variety of agricultural products are given in the MRs published by the DMI, but these studies suffer from a number of serious defects. The greatest difficulty with these studies is that they are mostly pre-war. Another complication in this connection arises from the fact that these case studies while giving details of the various charges in relation to each activity or service, do so without reference to the person or class performing the activity or service. Moreover, their coverage is restricted to agricultural products and a few livestock products, no similar information being available for the output of either organised industry or small scale or cottage industries. Recent MRs usually avoid giving price spreads and consequently no recent material is available even in respect of agricultural products.

2.162. Apart from the MRs, there are some technical studies and some isolated Government publications on trade margins in different sectors. The *Report of the Foodgrains Investigation Committee* (1950) gives a fairly comprehensive picture of the various handling and other charges at different stages of marketing from the stage of procurement or imports to that of the retailer. These studies are subject to the limitation that the margins relate only to the sales of procured foodgrains and consequently may not adequately be representative of the sale of grains in the free market.

2.163. In respect of the products of industry, isolated studies are available for certain commodities. For controlled products like sugar, data are fairly accurate and easily available. For certain States, monographs are available in respect of products of cottage industries, *e.g.*, S. Y. Krishnaswamy's *Rural Problems in Madras—Monograph.* Similar studies are also

available for a number of other States, but these can at best give rough indications of trade margins in certain localised areas and not of the total turnover or sales relevant to the trade margins indicated.

2.164. In respect of transportation, statistics of railway transport are fairly adequate and it is possible to estimate the net output originating in this sector with considerable accuracy. For road transport, estimates have to be framed on the basis of the estimated number of licensed commercial vehicles and trucks on the roads. Fairly satisfactory data are available in respect of civil aviation, both from the *Report of the Air Transport Enquiry Committee* and from published balance sheets of the limited number of Indian airways companies operating in the country. Statistics of river borne trade are not only inadequate in coverage but also, by definition, incomplete. Finally no estimation can be made in relation to other forms of transport, only the vaguest guesses being possible on the basis of an estimate of the number of bullock-carts, ponies, etc.

2.165. In the derivation of the net value of trade and transport by the product approach, it is exceedingly difficult to separate the value contributed by trade from that contributed by transport. All that can be done is to frame estimates of the aggregate value of trade and transport and then to allow for costs on an overall basis. In the absence of any data relating to total turnover, it is necessary first to estimate the value of the total marketed product. The gross or net trading income can then be obtained from this figure by application of suitable margins based on an analysis of price differentials. Data relating to marketed product are unsatisfactory. Even such estimates as are available in the MRs relate to the marketable surplus rather than to quantities actually marketed, and do not take into account the fluctuations in actually marketed quantities from year to year. Also, when any considerable body of producers find it necessary to repurchase products sold by them earlier in the season, such transaction will not appear in estimates of the marketable surplus.

2.166. The price differential analysis, necessary for this method of estimation, presents practical difficulties in view of the absence of data on prices at different stages of marketing for the same commodity. The price data, which can be pressed into use, are detailed below:—

(i) wholesale and retail prices of agricultural and livestock products collected by the Ministry of Food and Agriculture, including some prices relevant for consumer purchase in rural areas;

(ii) wholsale prices collected by the EACom for the purpose of the all-India wholesale price index;

(iii) wholesale and retail prices available in the State Government gazettes. These are not available for all parts of the country and do not cover many products.

(iv) State bulletins of statistics which give more or less the same data as contained in the gazettes;

(v) retail prices collected by the LB for the purpose of constructing working class cost of living index. Here the prices relate to commodities consumed by working classes and hence refer presumably to inferior qualities of products; and

(vi) some prices of imported products both at the stage of importing and at the stage of selling, available with the Tariff Board.

2.167. An analysis of the foregoing data indicates that there is wide difference in the commodities selected for report in each type of sale, and even where the commodities are the same there are possibly wide variations in the quality of the product.

2.168. Information on the earnings of traders can provide an alternative method of estimation in the trade sector. Data on earnings from trade, however, are extremely deficient. Income-tax statistics indicate incomes of the taxed group of traders, but there is possibility of non-reporting or under-reporting, which would result in an under-estimation of the income of larger traders and in an omission from tax statistics of the income of traders at the margin. Further, salaries earned in trade and transport establishments are placed in the category of salaries, and it is not known what percentage of this category represents salary income earned in trade and transport. Consequently, even apart from the possibility of evasion, income-tax statistics do not completely isolate income generated in the trade sector from other incomes subject to tax. Moreover, income-tax statistics are quite useless for deriving estimates of untaxed trading incomes, and these incomes form the bulk of the income from trade and transport. No satisfactory data are available in respect of the incomes of traders not subject to tax, except perhaps, for some scattered studies. The only possible method of estimation in respect of some of the groups for which no relevant figures of earnings are available is to formulate a likely range of average incomes of these traders on the basis of incomes earned in comparable occupations. A separation of employers and employees in trade and transport has also been attempted here. Previous to 1951 Census, some data for computing this were available in the *Report on an Enquiry into Wages, Hours of work, and Conditions of Employment in the Retail Trade of some towns of the Bombay Presidency* (1936) and more recently, in the material collected (again for the Bombay State) under the Employment and Establishment Act of 1948. The latter of these sources is fairly recent and of general applicability for Bombay State, but it relates only to urban areas and cannot, in any case, be deemed as representative of the whole country. Some other States have conducted census of shops and commercial establishments which give the number

of persons employed therein during 1948*. The 1951 census results giving detailed breakdown of self-supporting persons among employers, employees and independent workers are, however, available now and have been made use of for estimation in this Report.

2.169. The estimates worked out by us are presented below in tables 24 and 25. In table 24, the estimates are based on the income approach. Two variants of the approach have been tried, in the first, no account has been taken of income tax data, while in the second, income of assessees has been culled from relevant income tax statistics. The estimates in table 25 are based on an analysis of trade margins and are the results of a product flow approach. The estimates obtained by the first variant of the income approach have ultimately been adopted for our final tables.

*These figures are given in *The Indian and Pakistan Year Book* (1951) and are useful for the purpose of estimating the number of employers and employees in the trade sector.

TABLE 24 : INCOME FROM 'OTHER COMMERCE AND TRANSPORT' SECTOR—INCOME APPROACH

	1950-51			1949-50			1948-49		
	number of persons engaged (thousand)	per head earning (Rs.)	total income (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total income (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total income (Rs. crores)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
estimate I									
1. other commerce									
(*i*) employees	2,899	739	214	2,865	739	212	2,833	725	205
(*ii*) employers and independents	5,223	1,987	1,038	5,188	1,989	1,032	5,152	1,950	1,005
(*iii*) total: other commerce	8,122	1,542	1,252	8,053	1,545	1,244	7,985	1,515	1,210
2. other transport	1,411	1,034	146	1,384	1,035	143	1,358	1,014	138
3. total : other commerce and transport	9,553	1,466	1,398	9,437	1,470	1,387	9,343	1,443	1,348
estimate II									
1. other commerce									
(*i*) employees not assessed to income tax	2,881	739	213	2,847	739	210	2,815	725	204
(*ii*) employers and independent workers not assessed to income tax	5,060	1,681	851	5,025	1,682	845	4,995	1,650	824
(*iii*) persons assessed to tax	181	10,118	183	181	• 11,324	205	175	10,321	181
(*iv*) total : other commerce	8,122	1,535	1,247	8,053	1,565	1,260	7,985	1,514	1,209
2. other transport									
(*i*) persons not assessed to tax	1,400	919	129	1,373	920	126	1,348	902	122
(*ii*) persons assessed to tax	11	10,540	12	11	11,156	12	10	12,121	12
(*iii*) total : other transport	1,411	999	141	1,384	997	138	1,358	987	134
3. total : other commerce and transport	9,533	1,456	1,388	9,437	1,481	1,398	9,343	1,437	1,343

TABLE 25 : INCOME FROM 'OTHER COMMERCE AND TRANSPORT' SECTOR—PRODUCT APPROACH

(in Rs. crores)

	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)
gross trading income originating from products of			
(*a*) agriculture, livestock, fishery and forestry .	501.5	462.3	432.1
(*b*) mining, organised industry and small enterprises	912.9	858.7	860.6
(*c*) imports	248.2	236.0	230.8
passenger earnings from transport (motor, tramways, river and air) and earnings from air mails carried	65·2	63·9	49 6
others including hotels, cafes, money lenders, film industry, etc.	169.0	165.1	158.1
total . .	1896.8	1786.0	1731.2
less			
railway freight earnings	139.8	135.3	112.4
repairs and depreciation of all vehicles including bullock-carts	64.8	50.0	46.3
feed of animals engaged in transport	98.3	97.4	91.8
allowance for export trade margin . . .	28.8	23.0	20.8
payments to financial intermediaries . . .	23.0	22.2	16.2
wastage (of marketable surplus only) . . .	68.5	62.0	59.7
total income .	1473.6	1396.1	1384.0

2.170. Detailed notes on the method of estimation used by us are presented in the following paragraphs of the section.

(i) The method described in the First Report has been substantially revised in this Report. Thus, the total number of persons engaged in trade is taken from our revised estimates of the working force, and then split up into employers, independent workers and employees on the basis of the 1951 census. The employers, who form a very small proportion of the total self-supporting persons, have been lumped with the independent workers. All the earning dependents, in whose case an accurate split up is not possible, have been treated as employees in view of the census definition of an earning dependent. Figures of average annual earnings of employees in trade and similar services have been collected from a variety of sources, both published and unpublished, and averaged at Rs. 734; this has been rounded off to Rs. 725 for estimation purposes. The available figures of earnings of employers and independent workers in 1948-49 average at Rs. 1,946. This has been rounded off to Rs. 1,950. Estimated earnings in 1949-50 and

1950-51 of both employers and employees have been derived by adjusting the 1948-49 figures with reference to the rate of increase in earnings of factory labour.

(ii) In the second variant of the income approach in table 24, the total number of assessees in the trade sector has been estimated and distributed among different subgroups somewhat arbitrarily, but figures of their income have been obtained from the CBR. Similarly the non-assessees have been divided into employers and employees, average earnings being estimated at Rs. 1,650 (rounded off from Rs. 1,628) and Rs. 725 respectively, the former average having been computed by omitting all quotations clearly above the tax exemption limit.

(iii) Number of persons engaged in transport has been adjusted for railway employees. Porters and coolies in railway stations, however, have been included in the private transport sector, their number being estimated at 30 thousand. This estimate has been used for all the three years. The average income of persons engaged in civil aviation has been estimated at Rs. 3,000 per annum on the basis of data given in *The Bulletin of the Bureau of Economics and Statistics*, Bombay, January, 1951. The average income of persons engaged in road transport is estimated at Rs. 1,009 on the basis of some published and unpublished material, this has been rounded off to Rs. 1,000. The same average has been used for estimating the incomes of workers in transport by water and in transport otherwise unspecified. These figures of average earnings have been approximately adjusted for 1949-50 and 1950-51 by reference to the change in the earnings of factory workers.

(iv) As in trade, similarly for transport, a distinction has been made between assessed and unassessed income in the alternative estimate. Average earnings not subject to tax in road transport is estimated at Rs. 898 by excluding figures clearly above the income-tax exemption level and rounded off to Rs. 900. Similarly for transport by air, the average figure is estimated at Rs. 1,500.

(v) Calculations in respect of the value of product method have been put on a firmer footing on the basis of a more elaborate price differential analysis than was used in the First Report for the derivation of gross and net trade margins.

(vi) In agriculture, some minor changes have been introduced, following the change in method of valuation of crop output. The value of crop output has been derived by use of wholesale prices in a large number of small (primary assembling) market centres. Hence, in place of the earlier procedure of taking (net) wholesale and retail margins (at 5 and 8 p.c. respectively), only one-half of the wholesale margin

has been taken, in addition to the retail margin, to give the income from trade.

(vii) The validity of margins adopted, as taken from the *Report of the Foodgrains Investigation Committee,* has been checked on the basis of trade margins derived from various MRs. Net percentage income from trade as given in the latter agrees very closely with percentages derived from the former, if these margins are calculated on comparable prices.

(viii) Apart from foodgrains, trade margins on other agricultural products have been derived in a similar manner from the MRs by taking all trade and transport margins net of all deductible costs on packing, etc. For purposes of derivation of gross value of trade, similar commodities have been grouped together. A detailed classification of the entire crop output is preliminary to analysis outlined above, and several minor adjustments are necessary before the trade margins could be applied. Thus, for oilseeds it is assumed that there is no retail trade and the only margins allowed are for wholesale trade and relate to factory intake of oilseeds in urban areas. Similarly no retail trade margins have been allowed for jute and cotton. For sugarcane sold to factories also no trade margin has been allowed, as sugarcane output is evaluated at different statutory prices paid by factories to sugarcane growers, the only trade margins used in this connection relate to trade in gur and are based on detailed price differential analysis giving total spread between producers' prices (prices actually used for valuation of gur) and retail prices (derived from a variety of sources for a large number of centres). Finally, for largely imputed items like straw, grass and sugarcane bagasse, etc., no trade margin has been allowed on the hypothesis that there is very little trade in these products.

(ix) Similarly, trade margins on animal husbandry products have been taken for the marketed part of the products on the basis of the MRs. We have not used price differential analysis for this purpose, because these include costs such as packing, transport, etc., which cannot be separated because of the lack of independent data on costs. Nevertheless, the price differentials provide a useful check on the trade margins derived from the MRs and we have made use of the same in the case of products like milk, ghee, eggs, poultry, etc.

(x) Trade margin for timber is based entirely on price differentials and price spread has been worked out in several ways, on the basis of (i) purchase price of timber paid by factories, (ii) price paid by railways, (iii) urban retail price of timber, etc. Margins thus derived have been scaled down arbitrarily to allow for some processing (like sawing) which must enter into value of product. Timber being the most important single item of forest product, the margin thus derived has been applied to all forest products.

(xi) Trade margins for fishery products are taken from the MR on fish. No price differential analysis is possible in this sector, owing to the retail prices being available only for certain qualities of fish in important urban centres like Bombay and Calcutta. No corresponding producers' or wholesalers' prices are available.

(xii) Trade margins for mineral products are based on the spread between price relevant for export or purchase price of minerals paid by metal or mineral processing factories, and pit-head prices used by the GSI for valuation of mineral output. The value of coal consumed by industry and by railways has been worked out from the SSMI and the Railway Board reports. The balance of coal produced is assumed to be absorbed by trade. This has been evaluated at retail price and the difference between retail value and value at pit-head prices gives the gross value of trade in coal. Trading profits for some minerals have been found to be either zero or negligible owing to mining being a part of a vertically integrated industry (*e.g.*, iron and steel, aluminium, etc.). Where trade does exist, particularly for certain scarce products, trade margins have been found to be extremely high.

(xiii) In respect of manufactured products, it has been possible to cover a large part of the output of factory establishments. Output of factories has been classified into homogenious groups for which producers' and retail or consumers' prices are available. Both for cotton textiles and for iron and steel, trade margins adopted refer to controlled prices and do not take into account blackmarket profits or such other illegal gains, For sugar, total spread between ex-factory price as derived from the CM and from the SSMI, and prices paid by consumers both for rationed sugar and for open market sale of sugar, have been taken. The spread gives gross trade margins including all forms of transportation and other costs. Retail prices have been collected for a large number of centres for different parts of country from State bulletins of statistics. For jute manufactures, in the absence of proper retail price of jute bags, etc., procedure adopted has been to derive differential between prices paid by consumer of jute bags (like sugar and cement factories) and ex-factory values of these products. These margins represent gross wholesale margins on jute bags. No extra allowance for retail trade margins has been allowed for, because the volume of retail trade on gunny bags is known to be small. For tea, retail prices have been collected for a large number of centres from the State bulletins of statistics, and the differential between these prices and prices received by the manufacturers (derived from the SSMI), has been taken to represent the gross trade margin, including freight and transportation charges, packing, etc. The above factory products account for roughly 50 p.c. of total value of output of manufacturing as given by the SSMI for 1949. For all the other manufactured products, which have not been covered individually earlier,

the gross margins for trade and transportation have been taken at the level indicated by the weighted average of gross trade margins for products for which trade margins have been derived directly. In services, no trade margins have been allowed.

(xiv) Trade margins on imported foodgrains have been derived from the *Report of the Foodgrains Investigation Committee*. Since all imports of foodgrains are now on government account, greater validity attaches to these trade margins than margins used for trade in domestic output of grains. Figures for import of grains, pulse and flour into India in 1948-49 given in the *Accounts relating to the Sea-Borne Trade and Navigation in* India have been used for our estimates.

(xv) For a number of other imports, available data yield trade margins varying from 10 p.c. to 40 p.c. These data are, however, inadequate and have very limited coverage. Hence for all imports, an overall gross trade and transport margin has been adopted arbitrarily.

(xvi) For small enterprises, gross and net margins on handloom textile products are available for a large number of centres from the *Report of the Fact Finding Committee* (*Handloom and Mills*) (1947). For all textiles other than cotton, trade margins have been adopted from data given by S. Y. Krishnaswamy's *Rural Problems in Madras—Monograph*. For metals and minerals a margin of 15 p.c. has been adopted on the basis of data given by Krishnaswamy. For wood, sand and glass products an attempt has been made to work out trade margin on each type of product separately. For services of sawyers, carpenters, excavators, brick layers, builders, house decorators, etc., no trade margin has been considered necessary. For some products, like pottery, there takes place a large amount of direct sale by producer to consumer; for such products, therefore, two-thirds of the entire output have been assumed arbitrarily as sold direct to consumers, and a trade margin of 20 p.c. has been taken for the balance. For hides and skins, no trade margins have been allowed. For sale of shoes, etc., a margin of 12½ p.c. has been adopted for 50 p.c. of output of shoes, etc., on the basis of the *Rural Economic Enquiries in the Hyderabad State* 1949-51. For chemicals, the trade margin is based on Krishnaswamy's book. Data on trade margins for cigar, beedi, and oil pressing have been derived from Krishnaswamy's book and the Hyderabad rural enquiry, and a trade margin of 15 p.c. has been fixed. Of food products, 15 p.c. is assumed to be sold directly by producer to consumer, and no trade margin is allowed for the same. A margin of 20 p.c. has been taken for the balance of the food products. For miscellaneous products an average margin of 20 p.c. has been adopted arbitrarily, on the basis of available data on trade margins for miscellaneous products.

(xvii) Passenger earnings of motor transport have been estimated by two independent methods. Total petrol consumption in the Indian

Union by taxi cabs, buses and stage carriers (passenger traffic only) has been estimated from the percentage petrol consumption by different types of vehicles in the State of Bombay during 1947-48. Total receipts have been estimated (at Rs. 28 crores in 1948-49) on the basis of average mileage per gallon of petrol and average fare per mile. An altenative estimate is based on a ratio of workers employed in bus transport to total urban population derived from the number of workers engaged in bus transport in a number of States*. With an annual average income of Rs. 1,000 per worker, income of employees in bus transport alone is estimated at Rs. 22 crores. Corresponding estimate based on the first method is Rs. 24 crores (Rs. 28 crores *less* all costs except repairs and depreciation at 15 p.c.†). The first method has been accepted for the final estimate. No deduction for repairs and depreciation has been made here, as an overall deduction for all vehicles has been made in the process of netting.

(xviii) Incomes of persons engaged in hotels, cafes, etc.; and incomes of publishers, and book-sellers, brokers, commission agents, dealers in real estate and railway porters and coolies have been taken from the estimates worked out by income method.

(xix) For repairs and depreciation of urban bullock-carts, the estimate of number of carts has been revised on the basis of the 1945 and 1951 LC. The average price of carts, as available from the NSS (Poona Report), has been used and the rate of repairs and depreciation is placed at 20 p.c. of the value on the basis of all available information. For taxi cabs, 20 p.c. of earnings and for river boats, 10 p.c. of passenger earnings for passenger boats plus 30 p.c. of passenger earnings for boats carrying freight, have been deducted as repairs and depreciation of taxi cabs and boats respectively. As the total income originating in railways has been shown under a separate sector, the entire railway freight earnings have been deducted in the sector under consideration. The estimate of feed of animals deducted has been taken from the livestock sector. As no retail trade is involved in the case of commodities exported, a deduction has been made to allow for the over-estimation on this count. The estimated wastage on the marketable surplus of agricultural commodities has been treated as a trading cost and deducted here.

K. *Income from professions and liberal arts and domestic service*

2.171. The estimation of total income of persons engaged in professions and liberal arts is fraught with many difficulties. There are no reliable or regular statistics dealing with either total employment or average earnings in these occupations. Census occupation figures constitute the only data that can be used for estimation purposes with any degree of generality.

* *Labour Investigation Committee Report on Labour conditions in Tram and Bus services* (1945)

† This is composed as follows: petrol 13.6 p.c. and other costs 1.4 p.c.

2.172. Apart from census statistics there is no regular information bearing on the employment situation in these occupations. Some attempts have recently been made by the Ministry of Natural Resources and Scientific Research for compiling a national register of workers in medicine engineering, etc. But as yet the coverage is too inadequate. Besides these, there are some directories prepared either for individual cities or States, of persons in a particular profession, but these again furnish only a partial picture. In the case of persons employed in education, the Central and State Governments collect data regarding employment both in cities and villages and in private and government institutions. The statistical position regarding education can thus be regarded as less unsatisfactory than in the case of other professions.

2.173. Details regarding the number of persons engaged in this sector are available in the census by the major groups, *viz.*, medical and other health services, educational services, recreation services, business services, arts, letters and journalism, legal services, religious and charitable services, sanitary services, barbers and hair dressers, and laundries and washermen.

2.174. The position with regard to the material on average earnings in these occupations is quite unsatisfactory. The available information is diverse and regional and is more in the nature of isolated case studies rather than carefully planned statistical surveys. Scattered earnings data of different orders of reliability, are available in a number of publications. The following publications may be cited as a sample of the sources used: (i) V. K. R. V. Rao: *National Income of British India for* 1931-32; (ii) R. C. Desai: *Consumer Expenditure in India; 1931-32 to 1940-41*, Journal of the Royal Statistical Society, Vol. CXI, Part IV; (iii) Various issues of the ILG; (iv) *Farm Accounts in the East Punjab* (1949), PBEI; (v) *Social and Economic Survey of Refugee Camps in East Punjab* (1949), PBEI; (vi) Bihar Minimum Wage Legislation, Minimum Wage Act (notification of March 14, 1950); (vii) *Report of the Health Survey and Development Committee* (1946); (viii) D. R. Gadgil; *Poona; A Socio-economic Survey;* (ix) P. J. Thomas: *Some South Indian Villages—A resurvey;* (x) *Labour Investigation Committee Report on an Enquiry into Conditions of Labour in Principal Municipalities in India;* etc.

2.175. It is to be borne in mind that while the earnings data relate to a large number of activities like those of professors, doctors, lawyers, teachers, hakims, vaids, petty physicians, medical officers, house surgeons, matrons, public health nurses and sisters, ordinary nurses, compounders, midwives, sanitary inspectors, trained dais, dentists, dental surgeons, civil and mechanical engineers, chemists, astrologers, jugglers, washermen, barbers, scavangers, etc., yet they cannot be matched with the census categories by which the employment figures are available. That, however, would not be a serious defect if there were not wide divergence

between the earnings data, and also, if one were at all sure of the generality of the figures contained in these studies.

2.176. Income-tax statistics published by the CBR give the number of assessees and total taxable income for various professions. Quite apart from the problems of tax-evasion, the difficulty with income-tax data lies in the fact that they cover only those persons liable to tax; and even of these, only those that are carrying on these professions as a purely independent business of their own; persons who follow these professions as employees of somebody are left out of account in this context and are enumerated under the class 'salaries' and there is no means of ascertaining what percentage of taxed salary earners falls in the category of professions.

2.177. The following table presents the main features relating to the calculation of income originating in the sectors professions and liberal arts and domestic service.

TABLE 26 : INCOME FROM PROFESSIONS AND LIBERAL ARTS AND DOMESTIC SERVICE

	1950-51			1949-50			1948-49		
	number of persons engaged (thousands)	per head earning (Rs.)	total income (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total income (Rs. crores)	number of persons engaged (thousand)	per head earning (Rs.)	total income (Rs. crores)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
professions and liberal arts									
1. medical and other health services	757	1,528	116	732	1,530	112	706	1,500	106
2. educational services	1,036	662	69	984	663	65	986	650	64
3. letters, arts and science, etc.	722	917	66	701	918	64	676	900	61
4. legal services	253	1,274	32	242	1,275	31	235	1,250	29
5. religious and charitable services	763	611	47	737	612	45	712	600	43
6. sanitary services—scavangers	669	560	37	645	561	36	624	550	34
7. barbers and hairdressers	1,057	560	59	1,021	561	57	986	550	54
8. laundries—washermen	1,168	357	42	1,129	357	40	1,091	350	38
total	6,425	(728)	468	6,191	(729)	450	6,016	(714)	429
domestic service									
1. private motor drivers and cleaners	163	968	16	157	969	15	152	950	14
2. cooks, gardeners and other domestic servants	2,784	408	114	2,690	408	110	2,599	400	104
total	2,947	(439)	130	2,847	(439)	125	2,751	(430)	118

2.178. Some salient features of the method of calculation in the professions and liberal arts are detailed below.

(i) Total number of earnings observations, on which group averages rest, has increased to 157. Coverage in respect of States has also increased, and apart from most class A and B States, figures for some of class C States are also available.

(ii) For converting daily earnings into annual, the multiplier used is 300. Figures relating to previous years are inflated and adjusted for 1948-49. Similarly, data relating to post 1948-49 years are also adjusted for years under review by using suitable indices.

(iii) The rate of increase in earnings for adjustment purposes remains the same as in the case of factory workers. For post 1948-49 earnings estimates, the rate used is one-fourth the rate of change in factory earnings. For the group, educational services, income estimates for 1948-49 are derived from data supplied by the Ministry of Education.

(iv) In religion and law, a straight average has been used for all relevant adjusted earnings observations. In medicine, all observations above Rs. 5,000 have been left out. Straight averages are calculated for each of the 1951 census sub-orders, 8·10, 8·11, 8·12, 8·13, 8·14, 8·15, 8·16 and 8·17 for which sufficient data are available. For obtaining a weighted average for medicine, weights used are the respective numbers in each of these sub-orders. Averages thus derived for law and medicine work out at Rs. 1,267 (rounded off to Rs. 1,250) and Rs. 1,527 (rounded off to Rs. 1,500) respectively. For letters, arts and science, recreation services and business services weighted averages have been calculated. Weights used are the respective number of persons engaged and the average thus obtained works out very nearly at Rs. 900.

(v) To derive average earning of teachers, data supplied by the Ministry of Education are used exclusively. The average earning of teachers works out at Rs. 650 for 1948-49.

(vi) For the earnings of scavangers, a straight average of 85 observations relating to scavangers and other lowest paid conservancy staff is taken. The coverage in respect of States has considerably increased for this sub-order, as well as for sub-orders corresponding to washermen and barbers. Observed average earning of washermen works out at Rs. 479. But making a 25 p.c. deduction on account of costs incurred, net income is estimated at Rs. 359 (rounded off to Rs. 350) for estimation purposes.

(vii) For 1950-51 and 1949-50, average earnings for 1948-49 in all professions have been adjusted in relation to the rise in earnings of factory workers.

2.179. Some important features of the method of estimation in the domestic service sector are presented below.

(i) The coverage of data has increased in this sector also. Earnings observations now number 94, covering most of class A and B States.

(ii) For converting daily earnings into annuals, the multiplier used is again 300.

(iii) Data relating to pre 1948-49 years are adjusted on the basis of rates of increase in factory earnings and for post 1948-49 years at one-fourth the above rate. Average earning of private car drivers, based on 27 observations, works out at Rs. 959 (rounded off to Rs. 950) per annum; for other domestic servants, average based on 49 observations, mostly relating to urban areas, works out at Rs. 461 per annum. According to V.K.R.V. Rao* the earnings in rural areas are at least 30 p.c. lower than in urban areas and as such the average earnings of a domestic servant in rural areas would be about Rs. 322 per year. Also remembering that the ratio of rural to urban domestic servants, according to the 1951 census is 56:87, the overall average income per domestic servant works out at Rs. 407 (rounded off to Rs. 400) per annum. For years 1950-51 and 1949-50, the income figures have been inflated by taking one-fourth the rate of increase in factory earnings.

L. *Income originating in public authorities sector*

2.180. Apart from the estimation of income generated in the public sector, the main object of the analysis of the accounts of public authorities is to portray in some detail the relationship between the private and public sectors of the economy. The information sought in respect of the public sector may, for instance, throw light on the following items:—

(a) the net contribution of Government administrative and commercial activities to the national income of the country;

(b) volume of the current effective demand for goods and services that the activities of the public authorities generate;

(c) the draft that the public authorities make on the income generated in the private sector by way of direct and indirect taxes, various other receipts, miscellaneous fees, etc;

(d) the income that accrues to the public authorities by way of income from property and other entrepreneurial returns like surplus accruing on government owned enterprises;

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* *National Income of British India for 1931-32*

(e) the contribution that the public authorities make to the income generated in the private sector by way of transfers, gifts, grants, scholarships, subsidies, etc;

(f) the amount and financing of capital formation involved in the activities of public authorities;

(g) the amount that the public authorities withdraw from the private sector by way of borrowings and the various receipts and payments for interest and debt redemption that are involved in public lending and borrowing activities, etc.

2.181. The nature and form of the available statistical material on this sector may be discussed in the context of the units or the accounting entities that are considered to fall within the field of the public authorities sector. The following entities may thus be deemed as falling within this sector:—

(i) the Union Government, together with all the commercial enterprises owned and directed by it;

(ii) the Governments of class A and class B States together with all the commercial enterprises owned and directed by these States;

(iii) the class C States and centrally administered areas, accounts of which are incorporated in the Union budget accounts and/or in the State Government accounts;

(iv) municipalities, district boards, port trusts, city and cantonment development boards and improvement trusts, town and notified area committees, union boards, village panchayats, and all other local bodies not covered by the above;

(v) independent (statutory) public corporations like the Damodar Valley Corporation; and lastly,

(vi) funds accounts which are administered by the Government or by *ad hoc* public bodies, for which overall totals of receipts and outgoings are entered in the borrowings accounts of Government budgets.

2.182. Of the above, accounts of funds, etc., are usually taken out of the public authorities sector, and treated independently as another sector in a scheme of national accounts. The difficulty in such a procedure is that when public corporations are created by law and administer separate funds (*e.g.*, the Damodar Valley Corporation), they still remain of the nature of public authorities. There appears to be no valid reason why the Damodar Valley Corporation should not be treated as part of the public authorities sector*.

2.183. The accounts of the public authorities, that are available, are kept on a very simple basis of cash accounting, which involves the recording of all actual receipts and disbursements of cash, as and when and

* Some difficulty also arises in connection with the treatment of private funds administered under Government regulation but not belonging to the Government, such as, Devaswams, charities, etc.

where they occur. However, there is some distinction drawn between the items of revenue, capital, debt and remittances, and all transactions are classified into these heads. The revenue account broadly contains all items supposed to relate to current revenue transactions. Thus, all receipts from direct and indirect taxation, fees and miscellaneous receipts, together with all expenditure supposed to have been met out of current revenue are incorporated in the revenue account; the capital account records all receipts and expenditure of a capital nature, usually met out of borrowed funds, appropriations of interest on funds, etc. For purposes of presentation of financial statements and accounts, therefore, transactions relating to debt head items are also included in the capital budget, though capital receipts and borrowings are maintained and shown separately. Debt and remittances are designed to record all transactions involving public borrowings and remittances between the RBI, the Union Government, various State Governments, and England.

2.184. The distinction drawn by the public authorities between revenue and capital transactions does not always tally with the distinction desirable from the point of view of national income accounting. The present classification is influenced mainly by the nature of the sources of finance, and therefore, if some item of capital nature is financed out of current proceeds of taxation it is recorded under the revenue account. However, in the case of the major government commercial undertakings such as railways, irrigation works, electricity schemes, etc., commercial accounting principle is followed.

2.185. In the analysis of the public authorities sector, the entire field of governmental activity has to be divided into administrative and commercial activities. It is somewhat difficult to draw a completely clearcut distinction between these two types of activities. Thus, for example, in the case of what may be regarded as a commercial activity such as forest exploitation, it is not certain that strictly commercial principles are followed either on the income or on the expenditure side of this activity. On the other hand, in the case of an activity such as education or medical relief which would normally be regarded as administrative, Government will derive a revenue by way of fees or other charges some of which actually discriminate between different classes of persons enjoying the service on the basis of their income. Nevertheless, it is possible to draw this distinction between commercial and administrative activities sufficiently valid for all practical purposes. We have followed the procedure of treating activities such as education, health services, etc., as administrative and regard the income derived therefrom as indirect taxes. The list below pertains to activities which have been treated as commercial.

(i) railways
(ii) posts and telegraphs
(iii) forests
(iv) irrigation

(v) electricity schemes

(vi) road transport schemes

(vii) industrial enterprises

(viii) opium, salt, etc.

2.186. Quite apart from the above classificatory problem, at present all government transactions are classified on a dual principle, either on the basis of the line of activity, like education, public health, etc., or on the basis of important government departments like Land Revenue, Sales Tax, etc. Thus there is a combination of functional and departmental classification. A fair amount of detailed information is available for all receipts and expenditure, but the lack of a clearcut functional classification of these necessitates a re-classification of the budget data for purposes of national income accounting. Thus, the various revenue items have to be re-classified or re-grouped among direct taxes (on income and capital), indirect taxes, fees and miscellaneous receipts, inter-governmental transfers, rent and other income from property, interest receipts, and surplus or profit accruing from commercial activities. Similarly, expenditure—which is generally given for each head with break-downs of pay of officers, pay of establishment, allowances and honoraria, contingencies, grants-in-aid and contributions, original works and repairs, etc., and charges in England—has to be grouped, separately for administrative departments and for government commercial activities, into wages and salaries, purchase of commodities and services, capital expenditure (both wages and salaries and purchase of commodities and services), subsidies, transfers (to public authorities, non-government institutions and individuals), interest payments, etc. For commercial activities, the above categories require some modification, and profit or surplus also needs reckoning. Adequate details relating to all these break-downs are not always available and allocation of various expenditure items into some or all of the break-downs outlined above becomes necessary.

2.187. Some special difficulties arise in the case of expenditure on the civil works and on various schemes of State trading in foodgrains, etc. Civil works expenditure is available by categories not suitable for income accounting. As a result of this, arbitrary allocation of certain heads becomes necessary. Secondly, all schemes of grain trading are usually relegated to the borrowings account, by the creation of funds for the purpose, only the over-all profit or loss being shown in the budget as receipts of the agriculture department or as subsidy granted by the same. From the national income point of view, this is unsatisfactory. In the face of this difficulty, our present procedure has been to relegate the pure purchasing and selling activity in the State trading to the borrowing account. Wages and salaries in State trading are, therefore, accounted for under administration, as are the subsidies to cultivators, losses on imported foodgrains, etc.

2.188. We now examine the availability of the budgets of different types of public authorities and notice their particular limitations. Our accounts of Central Government for 1948-49, 1949-50 and 1950-51 are based on figures of 'actuals' as given in the Budgets and the Demands for Grants for 1950-51, 1951-52 and 1952-53 respectively. The Budget and the Demands figures sometimes show a discrepancy, necessitating the adjustment of the Demands figures to the Budget total, on the basis of the ratios obtained from the Demands. The Central Budget for 1950-51 includes all class C States except Coorg, but the Central Government accounts for 1948-49 and 1949-50 do not cover the class C States of Vindhya Pradesh, Bhopal, Himachal Pradesh, Manipur, Tripura, Bilaspur and Coorg.

2.189. For statistics relating to railways, and posts and telegraphs, detailed accounts are available, apart from those given in the budgets of the Central and State Governments. For railways, apart from the Railway Budget and financial accounts relating to railways, the annual reports of the Railway Board provide a wealth of statistics relevant for national income purposes. The Railway Board report covers not only the state-owned railways but also the private railways. The publication gives various data bearing on employment in railways, income generated in this sector, extent of capital formation, and railway receipts and expenditure. This enables a break-down of railway accounts for different purposes relating to national accounts. In respect of posts and telegraphs, the main sources of information are the financial accounts, budget documents, and the annual reports of the Director General of Posts and Telegraphs. Though containing a lot of useful statistics, these publications do not contain data on earnings of workers so that an independent check on the accuracy of the estimates derived from budget accounts, is not possible. Further, both in respect of railways and posts and telegraphs, employment figures give only statistics of persons employed directly, and fail to include workers employed by contractors.

2.190. In the First Report, our estimates related to railways covered by the Railway Budget. Accounts of railways not covered in the First Report have now been set up on the basis of data on income and working expenses of these railways available from the Railway Board report*.

* The following statement illustrates the coverage of the Railway Budget :

(*i*) *Completely covered*

1. Assam Railway
2. Bengal Nagpur Railway
3. Bombay, Baroda and Central India Railway
4. East India Railway
5. Eastern Punjab Railway
6. Great Indian Peninsula Railway
7. Madras and Southern Maharatta Railway
8. Oudh Tirhut Railway
9. South Indian Railway.

(*ii*) *Supposedly completely covered*

1. Scindia State Railway
2. Mysore State Railway
3. Rajasthan State Railway
4. Gaekwad's Baroda State Railway.

The allocation of working expenses into wages and salaries and purchase of commodities and services has been made on the basis of the ratio obtained for all railways for which budget data are available. In the First Report, estimated income from private railways had been entered under 'other commerce and transport'. These private railways have now been included in the railway sector. In the accounts of public authorities, however, accounts of railways have been taken net of figures for private railways.

2.191. For class A States, budget accounts are available for the years under consideration and the figures of 'actuals' can be used for estimation. For class B States, the position is somewhat unsatisfactory as these have been created out of the former princely states. For 1948-49, figures of 'actuals' are available only for four class B States, namely, Mysore, Hyderabad, Saurashtra and Travancore-Cochin. For Rajasthan and Madhya Bharat, budget estimates for 1949-50 have to be utilised in the absence of the relevant accounts. Further, the Uttar Pradesh and Bombay accounts do not incorporate the accounts of the merged states of Rampur and Tehri-Garhwal and of Baroda respectively. For 1949-50, 'actuals' are

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(*iii*) *Imperfectly covered*

1. Nizam's State Railway

(*iv*) *Not covered*

1. Saurashtra Railway
2. Barsi Light Railway
3. Shahdara (Delhi)-Saharanpur Light Railway
4. Ahmedpur-Katwa Railway
5. Arrah-Sasaram Light Railway
6. Bankura Damodar River Railway
7. Baraset-Basirhat Light Railway
8. Bengal Provincial Railway
9. Bukhtiarpur-Bihar Light Railway
10. Burdwan Katwa Railway
11. Cutch State Railway
12. Dehri-Rohtas Light Railway
13. Futwa-Islampur Railway
14. Howrah-Amta Light Railway
15. Howrah Sheakhala Light Railway
16. Jagadhari Light Railway
17. Kalighat-Falta Railway
18. Tezpur-Balipara Light Railway

The Railway Budget (for 1948-49) covers all railways under (*i*). Railways under (*ii*) would get covered by class B States budgets. In respect of (*iii*), the budget for Hyderabad gives only surplus accruing from the Nizam State Railway. Railways under (*iv*) are completely left out in the Railway Budget.

available for only three class B States, namely, Madhya Bharat, Jammu and Kashmir, and Saurashtra. For Mysore and Travancore-Cochin, accounts are available for 9 and 7½ months respectively. For Rajasthan, budget estimates for 6 months only are available, while for PEPSU, revised estimates are available. The problem of Hyderabad is a little different as the accounts here are available for 'fasli' years (corresponding to the period 1st October—30th September). It is satisfactory, however, to note that for 1950-51, 'actuals' were available for all class B States.

2.192. The above analysis reveals that even in respect of Government budgets, data are by no means complete. However, the Central and class A States roughly cover three-fourths of the entire public authorities sector from the standpoint of contribution to national income, and consequently the errors in respect of the class B States cannot exert considerable influence on the over-all magnitudes.

2.193. In respect of municipalities and other local authorities, the CSO collects and compiles data for incorporation in the annual SA. Information is available on income and expenditure, with details of income as derived from different municipal rates and taxes, realisation under special acts, other sources, and extraordinary debt, and expenditure on collection charges, general administration, public health and conservancy, public works and extraordinary debt. Although these data are not adequate for detailed national accounting, they do enable construction of tables giving current and capital transactions of municipalities to fit in with the accounts of other public authorities. In respect of district, union and other local boards the position is unsatisfactory in so far as statistics relating to their income and expenditure are highly incomplete.

2.194. Available figures of income and expenditure of municipalities, district and local boards for 1948-49 cover the whole of the Indian Union except Assam, Bihar, Madhya Pradesh, Uttar Pradesh and Hyderabad. For Madhya Bharat data for municipalities are available but no data are available for district and local boards. Figures for 1947-48 have been used for municipalities, district and local boards in Assam, Bihar, Madhya Pradesh and Uttar Pradesh. The available figures have been adjusted to cover Hyderabad in respect of municipalities and to cover Hyderabad and Madhya Bharat in respect of district and local boards.

2.195. Accounts have been received, in reply to a circular letter, from 14 improvement trusts. These accounts contain varying degrees of detail. Similarly, accounts of the port trusts of Bombay and Madras and the Port Commissioners of Calcutta have been directly obtained, and yield data useful for estimation of national income. Information regarding improvement trusts and port trusts (as directly received in the NIU)

are fairly adequate, and contain data with greater break-downs and variety, than the tabulated data on municipalities and district boards available with the CSO. For village authorities, no information is available in the CSO. Figures of income and expenditure of such authorities for 1946-47 in class A States have been taken from the *Report of the Local Finance Enquiry Committee* (1951) and have been utilised for the years of estimation.

2.196. Finally, attention may be drawn to a few changes in the analysis of government budget accounts which have been made in this report as compared with what has been done in the First Report. Some technical ratios adopted in the First Report, for classification of total expenditure into component groups have now been modified. Out of the total expenditure on construction by Government (administration), wages and salaries are now taken at 33·3 p.c. on the advice of the Chief Engineer, CPWD; for all other works, wages and salaries have been taken to be 50 p.c. of total expenditure arbitrarily. Similarly, 33·3 p.c. of capital expenditure of Government enterprises has been taken to constitute wages and salaries; for maintenance and repairs expenditure out of revenue account, 50 p.c. has been taken as wages and salaries. Secondly, in the First Report, grants to educational and scientific institutions had been taken as administrative expenditure on (teachers') wages and salaries, and as purchase of commodities in educational and other institutions. We have now preferred to treat these expenditures as transfer payments as they more properly constitute income generated in the private sector.

2.197. The contributions by the different branches of the public authorities sector to the national income are given in table 37 of this chapter in considerable detail, and hence are not given here.

M. *Income from house property*

2.198. Contribution to national income in this sector has been worked out separately for urban and rural house property. For urban areas, estimation has been made both on the basis of average rental per house and on the basis of municipal collection of house tax and an assumed relation between taxes paid and the gross rental. Municipal statistics used for this purpose suffer from several defects. The tax statistics give collections of taxes on both houses and land; taxes on land other than sites should not properly go into the component relevant for imputation of income from house property. Another difficulty is the likely underestimation due to under-assessment of the value of property and poor collection of tax—both understood to be general features of the municipal house tax.

2.199. The tax rate on house property differs widely from municipality to municipality. Recent information on municipal tax rates for a

number of municipalities is available in the *Report of the Local Finance Enquiry Committee.* Data have also been collected by the NIU on this point through a circular addressed directly to 534 municipalities; to which replies were received, from only 154 municipalities.

2.200. Some data on rural housing are available from the preliminary results of the NSS. These give all-India estimates of the average value of rural houses, age distribution of rural houses, as also the annual repair expenditure per household. These, together with census data on the number of rural houses have been utilised for imputation of the income from rural house property in the absence of any data directly bearing on rental income from rural houses. It must be added that we are not altogether happy about the validity of the NSS data used for this purpose.

2.201. The following table presents the main features of the estimation of income generated in the sector.

TABLE 27 : INCOME FROM HOUSE PROPERTY

	1950-51	1949-50	1948-49
(1)	(2)	(3)	(4)
rural			
1. number of houses (lakhs)	541·0	541·6	542·3
2. value of a house (Rs.)	877·0	855·0	816·0
3. undepreciated value of rural houses (Rs. crores)	4744·6	4630·7	4425·2
4. depreciation (Rs. crores)	2023·5	1974·9	1887·1
5. current value of houses (Rs. crores)	2721·1	2655·8	2538·1
6. gross rental (Rs. crores)	272·1	265·6	253·8
7. cost of repairs and maintenance per household (Rs.)	13·0	12·7	12·1
8. number of households (lakhs)	589·4	590·1	590·7
9. total cost of repairs and maintenance (Rs. crores)	76·6	74·9	71·5
10. net contribution to national income (Rs. crores)	195·5	190·7	182·3
urban			
1. number of houses (lakhs)	101·6	99·7	97·8
2. annual average rental income per house (Rs.)	245·7	245·7	245·7
3. total gross rental (Rs. crores)	249·6	245·0	240·3
4. *less* cost of repairs and maintenance (Rs. crores)	—26·8	—26·3	—25·8
5. *less* municipal taxes paid (Rs. crores)	—10·0	—10·0	—8·8
6. net contribution to national income (Rs. crores)	212·8	208·7	205·7
net contribution of the sector (Rs. crores)	408·3	399·4	388·0

2.202. The method of obtaining the more important entries in the above table is detailed below:—

(i) Number of occupied rural houses has been estimated by linear interpolation between the census figures of 1941 and 1951. It may be noted that the census data show a fall in the number of rural houses from 1941 to 1951.

(ii) The total number of rural houses has been split up according to the date of construction on the basis of a frequency distribution of houses according to age derived from the NSS. Only 3·4 p.c. of total number of houses are assumed to be built within one year on the basis of this information.

(iii) The rate of change in the number of rural houses has been worked out on the basis of data for 1901—1951 for undivided India and then the figure for the Indian Union is worked out on the basis of a ratio relating to 1941 data.

(iv) Average current value of a rural house in 1950-51 is obtained from the NSS. The wholesale price indices of food articles have been used to adjust this for 1948-49 and 1949-50. Undepreciated value of rural houses in all age groups is obtained by evaluating at this current average price. Current value of the rural houses built earlier than one year is then obtained by depreciating the value of the houses in each age-class by making use of the average age and annual depreciation rate of 2·5 p.c. No depreciation is deducted for houses less than one year old.

(v) As income from rural property is almost entirely an imputed item, rental value of rural houses is estimated on the basis of rural interest rates. Two alternative interest rates have been considered for this purpose; one, a straight mean of prescribed maximum rates for secured loans (8½ p.c.), and the other, a similar average for both secured and unsecured loans (10 p.c.). The averages have been worked out from the rates allowed by all currently operative legislations on the subject. The latter estimate has been used to get the gross rental of rural houses.

(vi) The net rental is obtained from the gross by deducting the cost of repairs and maintenance. The NSS gives the cost of repairs and maintenance per household as Rs. 12·65 in 1949-50. This has been adjusted by wholesale price index of food articles to get the relevant figures for 1948-49 and 1950-51. The numbers of rural households in the three years are obtained by linear interpolation between 1941 and 1951. The 1941 census does not, however, give the number of households, and the number of rural houses in 1941 has been adjusted by the ratio of rural houses and households in 1951 to get

the number of rural households in 1941. The product of cost per household and the total number of households gives the total cost of repairs and maintenance of rural houses.

(vii) Income from urban house property is estimated by two different methods. One of these is a repetition of the procedure adopted in the First Report, but with enhanced coverage of data. Figures of municipal taxes on houses and lands are given in the SA (1950) for the year 1948-49. This in conjunction with the tax/rent percentage of 7·4 worked out on the basis of returns from 91 municipalities collected by the NIU gives the rental income for the area covered by the reporting municipalities. The rental value of house property in the urban municipal area thus calculated has been used for estimating the rental value of house property of the urban area as a whole. The net income is derived from this by deduction of the actual municipal taxes collected.

(viii) The alternative estimate of gross rental is worked out from the number of houses in 1950-51, 1949-50 and 1948-49 obtained by linear interpolation between 1951 and 1941 census figures and the average annual rental income per house based on returns from 91 municipalities. For derivation of the net income, a deduction of 10·75 p.c. of gross rental for repairs and maintenance has been allowed on the basis of returns from 28 municipalities. Further, the total collection of taxes on houses has been treated as an indirect tax and has been deducted.

(ix) It may be added that the estimates based on the two methods are fairly close. The second method has, however, been adopted for this ensures a similarity of treatment in respect of the urban and rural areas.

N. *Balance of payments and net income from abroad*

2.203. Two different sets of data relating to this sector are available: (i) statistics of merchandise exports and imports (based on customs data), as published by the DGCIS in the annual *Accounts relating to the Sea-borne Trade and Navigation in India* and in similar accounts relating to overland trade and (ii) statistics of India's balance of payments, as compiled by the RBI, on the basis of statements of the Exchange Control Department (ECD) relating to foreign transactions. These latter statistics are periodically published with a fair amount of detail, in the *Reserve Bank of India Bulletin*, and summarised in the *Report on Currency and Finance*. Recently a pamphlet, *India's Balance of Payments*, 1948-51 has been published by the RBI bringing together data for the period January 1948 to December 1951. This also gives Indo-Pakistan balance of payments for the period July 1948 to December 1951. We have used this

publication for our estimates; and these now include the Indo-Pakistan balance of payments which was missed in the First Report.

2.204. The two sets of figures of trade in merchandise, as derived from customs, and the ECD data, vary considerably, because of difference in timing, coverage, and basis of valuation. The customs data relate to the physical movement of commodities; the ECD documents relate to actual 'payments' rather than to 'accruals'. However, detailed analysis carried out by the RBI shows that the time lag between the two sets of figures is less than a month, and, therefore, should not account for any but minor differences between the two sets of figures. The RBI has found that the major cause of the discrepancy between the two sets of figures lies in the different basis of valuation adopted.

2.205. This divergence between the two sets of figures makes it somewhat difficult to use the customs data, though the physical quantities exported and imported represent the 'accruals' of payments relevant for estimation of current income perhaps better than the estimates on this account based on the RBI material. Thus, we have been obliged to rely entirely on the RBI material because our main interest centres round the balance of payments rather than the balance of trade.

2.206. Some limitations attendant on the use of the RBI analysis of balance of payments data may be indicated here. Information regarding items like donations and remittances is incomplete, while information on investment income is subject to considerable error as foreign incomes earned and reinvested in India would not enter into the balance of payments at all. Further there are large payments designated as 'unclassified' to add to which there is also a large category of 'errors and omissions' in the current account. Moreover, no clear indication is available regarding the net outflow of factor incomes from the country with the result that this category is represented in our estimates only by the net outflow of investment income for which figures are available with the RBI.

2.207. The recent report, *Census of India's Foreign Liabilities and Assets* may provide a better basis for the estimation of accruals of investment income in India. But with the existing statistics, it is not possible to adjust the balance of payments figures on the basis of data given in this publication, because (i) though the census gives the foreign holdings of Indian industrial and other stock, nothing is known about the current earnings or dividends on these scrips, and (ii) the information on the holdings of assets abroad by Indian nationals is incomplete.

2.208. Tables 38 and 39 in the next section give details about India's international transactions.

II. Aggregation of Sector Estimates: National Tables

2.209. The various sector estimates dealt with earlier are aggregated here in table 28 which depicts the contribution made to national income by different enterprise sectors. The subsequent tables of the section highlight several aspects of the relation between a number of the aggregative estimates.

2.210. The estimates of national income for 1950-51 (together with comparable estimates for 1949-50 and 1948-49 at current prices) have been presented with break-downs similar to the ones given in our First Report. To the extent that the tables are based on data for only one year, the estimates of the three years are not objectively independent, and this should be borne in mind when making use of these figures for a study of trends in the economy. It may be added that the proportion of total income based on such data is about 30 p.c.

2.211. We may also indicate here, what according to us is the error margin involved in the estimates of national aggregates presented in the tables. In the earlier part of this chapter we have tried to indicate the different orders of reliability of the various sector estimates in qualitative terms. Such errors would partly cumulate and partly cancel on aggregation, and we can conceive of an error margin attached to the aggregate domestic product. The nature of data used for national income estimation precludes any possibility of estimating this error in a statistically valid sense. However, as the aggregate is certainly subject to an error margin, we think that it is only proper to affix a notional magnitude for the purpose. Details regarding estimation of the magnitude have been relegated to appendix 2 of this report. Suffice it to mention here that this margin works out at about 10 p.c. of the estimate of domestic product. However, for certain reasons indicated in the appendix referred to, the margin may possibly be somewhat higher. Thus, any conclusion based on the magnitude of the aggregate domestic product, or of some other national aggregate is subject to a margin of uncertainty approximately given by this error margin. Conclusions based on sector estimates and aggregates for a part of the nation are generally subject to a higher order of uncertainty. This fact should be borne in mind while drawing conclusions from our figures.

2.212. Apart from the modifications in the estimational procedure, discussed in the previous sections, two conceptual changes adopted in the present estimates should be stressed here. Land revenue has now been treated as a direct tax on income and not as an indirect tax as earlier. The other conceptual change relates to interest on consumer debt, which had earlier been treated as the (imputed) income of indigenous money-tenders for banking services. Following the widely accepted procedure we now treat their income from consumer debt interest as transfer

income. These incomes have in consequence been omitted from the estimate of national income.

2.213. With these preliminary remarks, we proceed to give below the estimates for 1950-51, 1949-50 and 1948-49 at current prices.

TABLE 28 : NATIONAL INCOME OF THE INDIAN UNION BY INDUSTRIAL ORIGIN

items	1950-51		1949-50		1948-49	
	net output (Rs. abja*)	p.c.	net output (Rs. abja*)	p.c.	net output (Rs. abja*)	p.c.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
agriculture						
1. agriculture, animal husbandry and ancillary activities†	47·8	50·2	43·8	48·6	41·6	48·1
2. forestry	0·7	0·7	·07	0·8	0·6	0·7
3. fishery	0·4	0·4	0·4	0·4	0·3	0·3
4. total of agriculture	48·9	51·3	44·9	49·8	42·5	49·1
mining, manufacturing and hand-trades						
5. mining	0·7	0·7	0·6	0·7	0·6	0·7
6. factory establishments	5·5	5·8	5·4	6·0	5·5	6·4
7. small enterprises	9·1	9·6	9·0	10·0	8·7	10·0
8. total of mining, manufacturing and hand-trades	15·3	16·1	15·0	16·7	14·8	17·1
commerce, transport and communication						
9. communications (post, telegraph and telephone)	0·4	0·4	0·3	0·3	0·3	0·3
10. railways	1·8	1·9	1·8	2·0	1·7	2·0
11. organised banking and insurance	0·7	0·7	0·6	0·7	0·5	0·6
12. other commerce and transport	14·0	14·7	13·9	15·4	13·5	15·6
13. total of commerce, transport and communication	16·9	17·7	16·6	18·4	16·0	18·5
other services						
14. professions and liberal arts	4·7	4·9	4·5	5·0	4·3	5·0
15. government services (administration)	4·3	4·5	4·1	4·6	4·0	4·6
16. domestic service	1·3	1·4	1·2	1·3	1·2	1·4
17. house property	4·1	4·3	4·0	4·4	3·9	4·5
18. total of other services	14·4	15·1	13·8	15·3	13·4	15·5
19. net domestic product at factor cost	95·5	100·2	90·3	100·2	86·7	100·2
20. net earned income from abroad	—0·2	—0·2	—0·2	—0·2	—0·2	—0·2
21. net national output at factor cost=national income	95·3	100·0	90·1	100·0	86·5	100·0

* abja = 100 crores = 10^9

† These include processing, marketing and other ancillary activities performed by the cultiv at or in respect of his own produce.

TABLE 29 : NET DOMESTIC PRODUCT OF THE INDIAN UNION BY CHARACTER OF ENTERPRISE

items	1950—51			1949—50			1948—49		
	net output (Rs. abja*)	percentage of		net output (Rs. abja*)	percentage of		net output (Rs. abja*)	percentage of	
		classified product	domestic product		classified product	domestic product		classified product	domestic product
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
small enterprises (largely household)									
1. agriculture (other than plantations, etc.)	47·4	64·8	49·6	43·5	63·7	48·2	41·3	63·2	47·6
2. fishery	0·4	0·6	0·4	0·4	0·6	0·4	0·3	0·5	0·3
3. small enterprises and hand-trades .	9·1	12·4	9·5	9·0	13·2	10·0	8·7	13·3	10·0
4. professions and liberal arts . .	4·7	6·4	4·9	4·5	6·6	5·0	4·3	6·6	5·0
5. domestic service	1·3	1·8	1·4	1·2	1·8	1·3	1·2	1·8	1·4
6. total of small enterprises . . .	62·9	86·0	65·8	58·6	85·8	64·9	55·8	85·5	64·4
larger enterprises									
7. agriculture (plantations, etc.) . .	0·4	0·5	0·4	0·3	0·4	0·3	0·3	0·5	0·3
8. forestry	0·7	1·0	0·7	0·7	1·0	0·8	0·6	0·9	0·7
9. mining	0·7	1·0	0·7	0·6	0·9	0·7	0·6	0·9	0·7
10. factory establishments . . .	5·5	7·5	5·8	5·4	7·9	6·0	5·5	8·4	6·3
11. railways	1·8	2·5	1·9	1·8	2·6	2·0	1·7	2·6	2·0
12. communications	0·4	0·5	0·4	0·3	0·4	0·3	0·3	0·5	0·3
13. organised banking and insurance .	0·7	1·0	0·7	0·6	0·9	0·7	0·5	0·8	0·6
14. total of larger enterprises . .	10·2	14·0	10·7	9·7	14·2	10·7	9·5	14·5	11·0
unclassified items.									
15. other commerce and transport .	14·0	..	14·7	13·9	..	15·4	13·5	..	15·6
16. government services (administration)	4·3	..	4·5	4·1	..	4·5	4·0	..	4·6
17. house property	4·1	..	4·3	4·0	..	4·4	3·9	..	4·5
18. total of unclassified items . .	22·4	..	23·5	22·0	..	24·4	21·4	..	24·7
19. net domestic product . . .	95·5	..	100·0	90·3	..	100·0	86·7	..	100·0

* abja = 100 crores = 10^9

Note.—Figures may not add up to totals given owing to rounding errors.

TABLE 30 : NET OUTPUT PER ENGAGED PERSON IN THE INDIAN UNION

items	1950-51			1949-50			1948-49		
	net output (Rs. abja*)	number of persons engaged (lakhs**)	net output per engaged person (Rs. thousands)	net output (Rs. abja*)	number of persons engaged (lakhs**)	net output per engaged person (Rs. thousands)	net output (Rs. abja*)	number of persons engaged (lakhs**)	net output per engaged person (Rs. thousands)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. agriculture	48·9	1036	0·5	44·9	1021	0·4	42·5	1005	0·4
2. mining and factory establishments	6·2	37	1·7	6·0	38	1·6	6·1	38	1·6
3. small enterprises	9·1	115	0·8	9·0	113	0·8	8·7	112	0·8
4. total of mining, manufacturing and hand-trades	15·3	153	1·0	15·0	152	1·0	14·8	151	1·0
5. railways and communications	2·2	14	1·6	2·1	14	1·5	2·0	14	1·4
6. banking, insurance and other commerce and transport	14·7	97	1·5	14·5	96	1·5	14·0	95	1·5
7. total of commerce, transport and communication	16·9	111	1·5	16·6	109	1·5	16·0	109	1·5
8. professions and liberal arts	4·7	64	0·7	4·5	62	0·7	4·3	60	0·7
9. government services (administration)	4·3	39	1·1	4·1	38	1·1	4·0	36	1·1
10. domestic service	1·3	29	0·4	1·2	28	0·4	1·2	28	0·4
11. total of other services	10·3	133	0.8	9·8	128	0·8	9·5	124	0·8
12. house property	4·1	..	..	4·0	..	..	3·9	..	..
13. net domestic product at factor cost	95·5	1432	0·67	90·3	1410	0·64	86·7	1388	0·62

* abja = 100 crores = 10^9

** lakh = 100,000

TABLE 31 : SHARE OF GOVERNMENT IN DOMESTIC PRODUCT AND EXPENDITURE IN THE INDIAN UNION

items	1950-51		1949-50		1948-49	
	(Rs. abja *)	p.c.	(Rs. abja *)	p.c.	(Rs. abja *)	p.c.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
government share in generation of net domestic product						
1. net output of government enterprises	2·9	3·0	2·7	3·0	2·4	2·8
2. net output of government administration	4·3	4·6	4·1	4·5	4·0	4·6
3. net output of the private sector	88·3	92·4	83·5	92·5	80·3	92·6
4. net domestic product	95·5	100·0	90·3	100·0	86·7	100·0
government share in national expenditure						
5. government current expenditure on commodities and services (government administration)	5·6	5.6	5.4	5.7	6.4	7·1
6. government administrative capital expenditure	1.0	1 0	1.2	1.3	1·0	1.1
7. government enterprises capital expenditure	1.6	1.6	1.5	1.6	1.1	1.2
8. net national expenditure at market price	100·3	100.0	94.6	100.0	90.6	100·0
government draft on private income						
9. direct taxes	2·3	2·4	2·2	2·4	2·4	2·8
10. indirect taxes	4·3	4·5	3·9	4·3	3·6	4·1
11. miscellaneous fees, etc.	1·1	1·1	1·0	1·1	0·9	1·0
12. private income	95·7	100·0	90·5	100·0	87·0	100·0
government capital formation and finance						
13. surplus on current account and maintenance provision	1.9		1.6		0.1	
14. government borrowing at home	0.5		0.1		2.7	
15. government borrowing abroad	0.1		0.2		—2.2	
16. extra-budgetary receipts and adjustment for cash balances	0.2		0.8		1.5	
17. gross capital formation on government account	2.7		2.7		2.1	

* abja = 100 crores = 10^9

TABLE 32 : NATIONAL ECONOMY AND THE REST OF THE WORLD

items	1950—51 (Rs. abja*)	1950—51 p.c.	1949—50 (Rs. abja*)	1949—50 p.c.	1948—49 (Rs. abja*)	1948—49 p.c.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
exports and imports in relation to net national product gross of imports						
1. exports of commodities and services	7·6	7·4	6·3	6·5	5·7	6·0
2. imports of commodities and services	6·9	6·8	6·7	6·9	8·0	8·5
3. net national product gross of imports of commodities and services	102·2	100·0	96·8	100·0	94·5	100·0
receipts from abroad in relation to net domestic product						
4. net earned income from abroad	—0·2	—0·2	—0·2	—0·2	—0·2	—0·2
5. net donation from abroad	0·1	0·1	0·1	0·1	0·1	0·1
6. net domestic product	95·5	100·0	90·3	100.0	86·7	100·0
financing of import surplus						
7. private long term borrowing	—0·1		—0·1		—0·2	
8. other long term borrowing (official and banking institutions)	0·0		0·2		—2·2	
9. short term borrowing (balancing short term capital movements)	—0·5		0·4		4·8	
10. net borrowing	—0·6		0·5		2·4	
11. import surplus (commodities and services)	—0·7		0·4		2·3	
12. other items on current account (net)	0·1		0·1		0·1	
13. net deficit on current account (=net borrowing)	—0·6		0·5		2·4	

*abja=100 crores=10^9

TABLE 33 : RELATIONSHIP BETWEEN THE NATIONAL INCOME AND THE OTHER MAIN AGGREGATES OF INCOME AND PRODUCT FOR THE INDIAN UNION*

items	1950—51	1949—50	1948—49
(1)	(2)	(3)	(4)
1. net domestic product at factor cost	95·5	90·3	86·7
2. earned income from abroad	—0·2	—0·2	—0·2
3. net national product at factor cost=national income	95·3	90·1	86·5
4. indirect taxes including miscellaneous fees	5·4	4·9	4·5
5. *less* subsidies	—0·4	—0·4	—0·4
6. net national product at market price	100·3	94·6	90·6
7. net domestic product at factor cost	95·5	90·3	86·7
8. *less* income from domestic product accruing to government	—0·7	—0·6	—0·5
9. income from domestic product accruing to private sector	94·8	89·7	86·2
10. national debt interest	0·4	0·5	0·5
11. earned income from abroad	—0·2	—0·2	—0·2
12. transfer payments	0·6	0·4	0·4
13. net donations from abroad	0·1	0·1	0·1
14. private income	95·7	90·5	87·0

*In Rs. abja, abja=100 crores=10^9

TABLE 34 : CURRENT ACCOUNT OF PUBLIC AUTHORITIES : ADMINISTRATION*

(1)	1950-51 (2)	49-50 (3)	48-49 (4)	(5)	1950-51 (6)	49-50 (7)	48-49 (8)
expenditure				*revenue*			
current expenditure on commodities and services				*direct taxes on income*			
				10. corporation tax	0·39	0·40	0·64
1. civil administration	3·36	3·17	2·95	11. other income taxes	1·40	1·32	1·33
2. defence	1·88	1·76	3·03	12. land revenue	0·52	0·47	0·42
3. miscellaneous	0·35	0·45	0·40	13. total direct taxes	2·31	2·19	2·39
4. total	5·59	5·38	6·38				
5. subsidies	0·41	0·36	0·40	*indirect taxes*			
6. transfer payments	0·59	0·44	0·36				
7. total current expenditure	6·59	6·18	7·14	14. customs	1·60	1·41	1·39
				15. excise	1·12	1·16	1·07
saving				16. stamps	0·24	0·22	0·20
				17. other taxes and duties	1·32	1·15	0·96
8. surplus on current account	1·42	1·06	—0·20	18. total indirect taxes	4·28	3·94	3·62
				fees and miscellaneous receipts			
				19. civil administration	0·63	0·57	0·55
				20. miscellaneous	0·48	0·43	0·39
				21. total	1·11	1·00	0·94
				22. total tax revenue	7·70	7·13	6·95
				transfer of operating surplus from current account of commercial enterprises			
				23. railways	0·23	0·15	0·16
				24. others	0·19	0·17	0·09
				25. total	0·42	0·32	0·25
				income from property			
				26. interest receipts	0·10	0·10	0·10
				27. other receipts	0·16	0·16	0·13
				28. total income from property	0·26	0·26	0·23
				29. *less* national debt interest	—0·37	—0·47	—0·49
9. total	8·01	7·24	6·94	30. total	8·01	7·24	6·94

* In Rs. abja, abja = 100 crores = 10^9

TABLE 35 : CURRENT ACCOUNT OF PUBLIC AUTHORITIES: ENTRERPRISES*

	1950-51	49-50	48-49		1950-51	49-50	48-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
expenditure				*revenue*			
purchase of commodities and services from other enterprises				*sale of commodities and services*			
1. railways . . .	0·68	0·67	0·60	17. railways . .	2·66	2·60	2·35
2. others . . .	0·23	0·22	0·19	18. others . . .	1·13	0·97	0·82
3. total . . .	0·91	0·89	0·79	19. total . .	3·79	3·57	3·17
wages and salaries							
4. railways . . .	1·15	1·14	1·13				
5. others . . .	0·48	0·42	0·40				
6. total . . .	1·63	1·56	1·53				
interest payment to private sector through government (debt services)							
7. railways . . .	0·26	0·23	0·22				
8. others . . .	0·09	0·07	0·07				
9. total . . .	0·35	0·30	0·29				
provision for maintenance and depreciation							
10. railways . . .	0·34	0·41	0·24				
11. others . . .	0·14	0·09	0·07				
12. total . . .	0·48	0·50	0·31				
operating surplus							
13. railways . . .	0·23	0·15	0·16				
14. others . . .	0·19	0·17	0·09				
15. total . . .	0·42	0·32	0·25				
16. total . . .	3·79	3·57	3·17	20. total . . .	3·79	3·57	3·17

TABLE 36 : CAPITAL ACCOUNT OF PUBLIC AUTHORITIES : ADMINISTRATION AND ENTERPRISES COMBINED*

	1950-51	49-50	48-49		1950-51	49-50	48-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
expenditure				*revenue*			
commercial enterprises							
1. maintenance . .	0·32	0·36	0·21	10. surplus on current account . .	1·42	1·06	—0·20
2. capital outlay . .	1·28	1·14	0·90	11. maintenance provision: commercial enterprises	0·48	0·50	0·31
3. net purchase of assests	0·05	0·01	0·02				
4. total . . .	1·65	1·51	1·13	12. net borrowing .	0·77	1·12	1·97
administrative departments							
5. maintenance . .	0·31	0·30	0·25				
6. capital outlay . .	0·71	0·77	0·64				
7. net purchase of assets	...	0·10	0·06				
8. total . . .	1·02	1·17	0·95				
9. total . . .	2·67	2·68	2·08	13. total . . .	2·67	2·68	2·08

* In Rs. abja, abja = 100 crores = 10^9

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TABLE 37 : EXPENDITURE OF PUBLIC AUTHORITIES

	factor payments												other payments												total of factor payments and other payments		
	wages and salaries			interest			surplus			total contribution to domestic product at factor cost			purchase of commodities and services from other enterprises			maintenance provision			transfer payments			purchase of assets					
	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
current account of public authorities : administration																											
1. civil administration and miscellaneous .	2·87	2·72	2·61	...	...	...	...	...	...	2·87	2·72	2·61	0·84	0·90	0·74	...	..	..	1·00	0·80	0·76	...	...	...	4·71	4·42	4·11
2. defence . .	1·07	0·98	1·09	...	...	...	...	...	...	1·07	0·98	1·09	0·81	0·78	1·94	...	...	...	...	...	...	...	...	...	1·88	1·76	3·03
3. total .	3·94	3·70	3·70	...	...	...	...	...	...	3·94	3·70	3·70	1·65	1·68	2·68	...	...	...	1·00	0·80	0·76	...	...	...	6·59	6·18	7·14
current account of public authorities : enterprises																											
4 railways . .	1·15	1·14	1·13	0·25	0·23	0·22	0·23	0·15	0·16	1·64	1·52	1·51	0·68	0·67	0·60	0·34	0·41	0·24	...	...	...	...	...	...	2·66	2·60	2·35
5. post and telegraph	0·27	0·23	0·22	0·01	0·01	0·01	0·04	0·03	0·02	0·32	0·27	0·25	0·04	0·05	0·06	0·03	0·03	0·02	...	...	...	...	...	...	0·39	0·35	0·33
6. forest . .	0·06	0·04	0·04	...	...	...	0·13	0·12	0·10	0·19	0·16	0·14	0·02	0·02	0·02	0·01	0·02	0·01	...	...	...	...	...	...	0·22	0·20	0·17
7. road transport .	0·02	0·03	0·02	...	...	...	0·01	0·01	...	0·03	0·04	0·02	0·06	0·04	0·01	0·01	0·01	0·01	...	...	...	...	...	...	0·10	0·09	0·04
8. industries . .	0·05	0·04	0·04	0·03	0·02	0·02	0·07	0·03	0·02	0·15	0·09	0·08	0·07	0·07	0·05	0·03	0·01	0·01	...	...	...	...	...	...	0·25	0·17	0·14
9. irrigation . .	0·08	0·08	0·07	0·05	0·04	0·04	—0·07	—0·03	—0·05	0·06	0·09	0·06	0·04	0·04	0·05	0·06	0·02	0·02	...	...	...	..	...	..	0·16	0·15	0·13
10. others .	..	...	0·01	...	...	...	0·01	0·01	..	0·01	0·01	0·01	...	...	..	...	...	...	..	..	...	..	...	...	0·01	0·01	0·01
11. total . .	1·63	1·56	1·53	0·35	0·30	0·29	0·42	0·32	0·25	2·40	2·18	2·07	0·91	0·89	0·79	0·48	0·50	0·31	...	...	...	...	...	...	3·79	3·57	3·17
capital account of public authorities																											
12. administration .	0·41	0·44	0·35	...	...	...	...	...	...	0·41	0·44	0·35	0·61	0·63	0·54	...	...	...	...	...	..	...	0·10	0·06	1·02	1·17	0·95
13. enterprises .	0·53	0·50	0·37	...	...	...	...	...	...	0·53	0·50	0·37	1·07	1·00	0·74	...	..	...	...	...	...	0·05	0·01	0·02	1·65	1·51	1·13
14. total . .	0·94	0·94	0·72	...	...	...	...	...	...	0·94	0·94	0·72	1·68	1·63	1·28	...	...	...	...	...	...	0·05	0·11	0·08	2·67	2·68	2·08
grand total .	6·51	6·20	5·95	0·35	0·30	0·29	0·42	0·32	0·25	7·28	6·82	6·49	4·24	4·20	4·75	0·48	0·50	0·31	1·00	0·80	0·76	0·05	0·11	0·08	13·05	12·43	12·30

* In Rs. abja, abja = 100 crores = 10^9

TABLE 37 : EXPENDITURE OF PUBLIC AUTHORITIES

	factor payments											
	wages and salaries			interest			surplus			total contribution to domestic product at factor cost		
	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
current account of public authorities : administration												
1. civil administration and miscellaneous .	2·87	2·72	2·61	...	...	...	...	...	...	2·87	2·72	2·61
2. defence . .	1·07	0·98	1·09	...	...	...	...	...	...	1·07	0·98	1·09
3. total .	3·94	3·70	3·70	...	...	...	...	...	...	3·94	3·70	3·70
current account of public authorities : enterprises												
4 railways . .	1·15	1·14	1·13	0·26	0·23	0·22	0·23	0·15	0·16	1·64	1·52	1·51
5. post and telegraph	0·27	0·23	0·22	0·01	0·01	0·01	0·04	0·03	0·02	0·32	0·27	0·25
6. forest . .	0·06	0·04	0·04	...	...	...	0·13	0·12	0·10	0·19	0·16	0·14
7. road transport .	0·02	0·03	0·02	...	...	...	0·01	0·01	...	0·03	0·04	0·02
8. industries . .	0·05	0·04	0·04	0·03	0·02	0·02	0·07	0·03	0·02	0·15	0·09	0·08
9. irrigation . .	0·08	0·08	0·07	0·05	0·04	0·04	—0·07	—0·03	—0·05	0·06	0·09	0·06
10. others .	..	...	0·01	..	...	..	0·01	0·01	..	0·01	0·01	0·01
11. total . .	1·63	1·56	1·53	0·35	0·30	0·29	0·42	0·32	0·25	2·40	2·18	2·07
capital account of public authorities												
12. administration .	0·41	0·44	0·35	...	...	...	...	...	...	0·41	0·44	0·35
13. enterprises .	0·53	0·50	0·37	...	...	...	...	...	...	0·53	0·50	0·37
14. total . .	0·94	0·94	0·72	...	...	...	...	...	...	0·94	0·94	0·72
grandtotal .	6·51	6·20	5·95	0·35	0·30	0·29	0·42	0·32	0·25	7·28	6·82	6·49

	other payments												total of factor payments and other payments		
	purchase of commodities and services from other enterprises			maintenance provision			transfer payments			purchase of assets					
	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49	50-51	49-50	48-49
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
current account of public authorities : administration															
1. civil administration and miscellaneous .	0·84	0·90	0·74	...	..	..	1·00	0·80	0·76	...	...	...	4·71	4·42	4·11
2. defence . .	0·81	0·78	1·94	...	...	...	...	...	...	...	...	...	1·88	1·76	3·03
3. total .	1·65	1·68	2·68	...	...	...	1·00	0·80	0·76	...	...	...	6·59	6·18	7·14
current account of public authorities : enterprises															
4 railways . .	0·68	0·67	0·60	0·34	0·41	0·24	...	...	...	...	...	...	2·66	2·60	2·35
5. post and telegraph	0·04	0·05	0·06	0·03	0·03	0·02	...	...	...	...	...	...	0·39	0·35	0·33
6. forest . .	0·02	0·02	0·02	0·01	0·02	0·01	...	...	...	...	...	...	0·22	0·20	0·17
7. road transport .	0·06	0·01	0·01	0·01	0·01	0·01	...	...	...	...	...	...	0·10	0·09	0·04
8. industries . .	0·07	0·07	0·05	0·03	0·01	0·01	..	...	...	...	...	...	0·25	0·17	0·14
9. irrigation . .	0·04	0·04	0·05	0·06	0·02	0·02	...	...	...	..	...	..	0·16	0·15	0·13
10. others .	...	...	...	...	...	...	..	..	...	..	...	...	0·01	0·01	0·01
11. total . .	0·91	0·89	0·79	0·48	0·50	0·31	...	...	...	...	...	...	3·79	3·57	3·17
capital account of public authorities															
12. administration .	0·61	0·63	0·54	...	...	...	...	...	..	...	0·10	0·06	1·02	1·17	0·95
13. enterprises .	1·07	1·00	0·74	...	..	...	...	...	...	0·05	0·01	0·02	1·65	1·51	1·13
14. total . .	1·68	1·63	1·28	...	...	...	...	...	...	0·05	0·11	0·08	2·67	2·68	2·08
grandtotal .	4·24	4·20	4·75	0·48	0·50	0·31	1·00	0·80	0·76	0·05	0·11	0·08	13·05	12·43	12·39

* In Rs. abja, abja = 100 crores = 10^9

TABLE 38 : INDIA'S BALANCE OF INTERNATIONAL TRANSACTIONS ON CURRENT ACCOUNT*

(1)	1950-51 (2)	1949-50 (3)	1948-49 (4)	(5)	1950-51 (6)	1949-50 (7)	1948-49 (8)
expenditure				*revenue*			
1 merchandise imports	6·33	6·13	7·39	8. merchandise exports	6·47	5·20	4·70
2 government (not included elsewhere)	0·16	0·25	0·22	9. government (not included elsewhere)	0·19	0·21	0·24
3 investment income	0·31	0·29	0·30	10. investment income	0·06	0·09	0·12
4 donations	0·06	0·05	0·06	11. donations	0·19	0·16	0·15
5 other current payments for commodities and services.	0·44	0·35	0·38	12. other current payments for commod ties and services	0·95	0·91	0·75
6 capital outflow	0·56	..	..	13. capital inflow	..	0·50	2·39
7 total	7·86	7·07	8·35	14. total	7·86	7·07	8·35

TABLE 39 : INDIA'S BALANCE OF INTERNATIONAL TRANSACTIONS ON CAPITAL ACCOUNT*

(1)	1950-51 (2)	1949-50 (3)	1948-49 (4)	(5)	1950-51 (6)	1949-50 (7)	1948-49 (8)
expenditure				*revenue*			
1 private long term capital (excluding banking institutions)	0·19	0·18	0·27	6. private long term capital (excluding banking institutions)	0·10	0·07	0·08
2 other long term capital (official and banking institutions)	0·15	0·20	2·46	7. other long term capital (official and banking institutions)	0·18	0·35	0·24
3 balancing short term capital (including errors and omissions)	1·18	1·04	0·12	8. balancing short term capital (including errors and omissions)	0·68	1·50	4·92
4 current adverse balance met by capital inflow	..	0·50	2·39	9. capital outflow	0·56	..	..
5 total	1·52	1·92	5·24	10. total	1·52	1·92	5·24

*In Rs. abja, abja = 100 crores = 10^9.

2.214. It may be noted that the tables follow the formal pattern adopted in the First Report. The only major change is the dropping of the table on national accounts of the Indian Union. As it has not yet been possible to estimate the entries depicted symbolically in the First Report (provision for depreciation, consumer expenditure, gross private domestic capital formation and private saving), there is no point in repeating the symbols. The other changes are minor and are confined to the table depicting the relation between the national income and the other main aggregates of income and product.

2.215. As the tables given above present figures for three years, it is tempting to draw conclusions regarding change in the national income and its components over this period. There are, however, certain fundamental limitations that will inevitably attach to such conclusions on account of the fact that figures for each year are not all based on independent data for the year concerned. Thus, for example, the working force for each of these three years is calculated by interpolation on the basis of 1941 and 1951 census data; this affects those components of the national income estimates which are based on the income approach, *i.e.*, the application of estimated income per worker to the number of workers in sectors like small enterprises, other commerce and transport, professions and liberal arts and domestic service. Somewhat similar considerations apply to the calculations of national income attributable to items like livestock product and fisheries, as well as some items of agricultural output for which we have used conventional estimates of value per acre. Lastly, the share of national income attributable to house property is based on conventional considerations rather than on actual indications of change from year to year. The only components of national income which can truly be regarded as reflecting annual changes would be the value of agricultural, mineral and forest output, net contribution of organised industry, net contribution of organised banking and insurance, net contribution of railways and State owned means of communications, and the contribution of Government sector in the Central, State and local fields. Further, the item relating to rest of the world is also based on actual figures for each year.

2.216. In view of these facts, it is somewhat hazardous to indicate possible inferences relating to change in national income over the three years 1948-49 to 1950-51. Nevertheless, we may draw attention to the following changes which our figures appear to indicate in national income over this period:

(i) The per capita national income at current prices has shown an increase of 7·4 p.c. from 1948-49 to 1950-51. But if they are calculated at constant prices, which is more meaningful, it is found that the per capita income has remained practically constant over the period, the figure showing a slight increase in 1949-50 (0·7 p.c.) and a slight decrease in 1950-51 (0·9 p.c. over 1949-50).

(ii) The national income at current prices as given in table 28, indicates a slight shift in favour of primary production; but if the figures are calculated in terms of constant prices, they show that the position is practically the same.

(iii) The contribution made by industry, which consists of factory establishments and small enterprises, shows a slight rise in terms of current prices. However, the figures when computed in terms of constant prices, show a slight decline. The proportion of the total contribution made by industry shows a fall both in terms of current and constant prices. This fall is not only true for industry as a whole but also separately for the two components of the industry sector, *viz.*, factory establishments and small enterprises.

(iv) The one sector which shows an increase both in terms of current and constant prices as well as in terms of proportion to the national income is what may broadly be described as the public authority sector including communications, railways and Government services.

(v) Tables 34—36 relating to the Government sector show an increase in tax revenue, especially in indirect taxes, in Government expenditure, and in capital formation in the public sector, all of which are indicative of the increasing role of Government in the Indian economy.

(vi) Tables 38-39 which relate to India's foreign transactions, show over the period, a reduced net inflow of foreign capital.

2.217. For a detailed account of the figures relating to national output at constant prices, the reader is referred to appendix 1. It would, however, be rash to draw any further or more detailed inferences regarding trends from either this appendix or tables 28—39 above, partly because the period covered is short and partly because of the factors referred to in paragraph 2.215. It may, however, be possible to tie up our figures with previous estimates of national income notably those by V.K.R.V. Rao for 1931-32, and show some very rough conclusions regarding trends. We suggest that this should be left to research workers who may also be encouraged to undertake long-term studies in trends in national income.

2.218. We have already mentioned in paragraph 2.214 that we have not thought it proper to reproduce the table on national accounts of the country once again with several unestimated constituents. It will be apparent from a perusal of this chapter that the various sector estimates have now a more sound empirical base than the estimates in our First Report. But we have to admit that even though we paid considerable attention to this aspect of the matter, it was not possible for us to deal with the estimation of constituents designated by symbols in the

First Report. The main reason for this has been the absence of adequate data at our disposal. We feel, however, that it is important to get estimates, however rough, of these constituents. For this purpose, there is now available a certain amount of data in the two first round reports of the NSS and the analysis of company balance sheets conducted by the RBI. Further additional data of more detailed type bearing on the investment aspects will soon be available from the forthcoming reports of the Rural Credit Survey undertaken by the RBI. What will be needed then is a thorough assimilation of the currently available material and further *ad hoc* work on individual items and regions required for this purpose. This field of research could appropriately be taken up by non-official research institutions and universities.

CHAPTER THREE

RECOMMENDATIONS ON THE IMPROVEMENT OF DATA

3.1. The existing estimates have been arrived at, in the main, by calculation of the national product in the major fields of agriculture and organised industry. Data for estimating national product even in these fields are not completely satisfactory to-day. The main existing shortcomings in the area statistics are (a) incomplete coverage and (b) systems of compilation of varying accuracy. The merger of former princely states in the Indian Union have brought in large areas for which no reports were previously available, and where the system of reporting has not, even now, been fully extended. The statistics of yield rate are also uneven from the standpoint of reliability. The old method of a fixed standard yield and eye estimation of the annual condition of crops is unsatisfactory. Within the last decade crop cutting experiments of the ICAR and ISI have made considerable progress and now (*i.e.*, in 1952-53) for the major cereal crops of rice and wheat, yield estimates are made as a result of the ICAR crop cutting experiments over bulk of the area under these crops. The ICAR* is steadily extending the scope of the activities of its crop cutting surveys to other crops including commercial crops. Apart from major crops, there is to-day practically no information regarding the area and out-turn of various fruits and vegetables as also condiments and spices, etc. While it is gratifying to note that separate area and out-turn statistics for potato and a few other crops are now forthcoming, the coverage of such data is yet too small in view of the tremendous importance of some of the crops now lumped up in the area statistics given for these unclassified groups in the land utilisation statistics. Also, there is some degree of uncertainty in respect of the reporting basis of these crops.

3.2. In regard to improvement of area statistics, our recommendations relate first to the unsurveyed and non-reporting areas. In our view, immediate steps should be taken firstly to survey and map the unsurveyed areas and that secondly, in the non-reporting areas and in areas where no satisfactory reporting agency exists, steps should be taken gradually to establish such an agency. We feel that the reporting of area statistics should be ordinarily done by the primary agency responsible for the administration of land revenue for there is no other agency which is either more extensive or which reaches the village level with an equally full coverage. Moreover, as a consequence of land reforms

*Now crop cutting wing of the NSS.

or of progressive changes in the administration of land revenue such agency is bound to come into existence in most areas where it does not exist to-day. This process might, however, take some time. The surveying and mapping of the unsurveyed areas might take even longer. As an interim measure, therefore, we suggest that in such areas which are either unsurveyed or where no satisfactory agency exists to report the area statistics, the statistics might be obtained on a sample basis with appropriate sampling procedure. The work might be done by the statistical bureaus, departments of agriculture or the revenue authorities of the respective State Governments. Some of the State Governments might need either technical or financial assistance in this matter; we recommend that this should be made available to them.

3.3. As regards improvement of the present area statistics, we feel that in view of the burden of multifarious administrative duties imposed on the present reporting agency, it will be a great advantage if the burden of statistical reporting is reduced in a rational way. At present in most of the temporarily settled areas, the area reporting is based, at any rate in principle, on a complete enumeration of crops by a plot to plot inspection of all cultivable lands. While there is a certain benefit in such total field coverage, we feel that in view of the burden of work it involves, it might not be necessary or advisable to attempt full coverage every year. We, therefore, recommend that while the basis of area reporting by the revenue agency should be primarily the same as it is at present, the total coverage should be attained over a number of years, say five, so that every year, the crop areas would be reported from only say one-fifth of the villages. This procedure should be carefully distinguished from the general principle of sample surveys. The requirement of a full periodic coverage, which period ordinarily should not be more than five years, is an important one and distinguishes this procedure from the ordinary sample survey. Our recommendation will require and enable the primary land records in all villages to be kept and maintained on a uniform basis. It will also enable the work of collection of data to be combined usefully with routine administrative duties of the administrative personnel. As we have earlier noted there is a certain advantage in the statistical collection and reporting being done by the agency responsible for the related administration—in the present case the revenue agency. In the first instance, the quality of data so collected is in general likely to be superior to that of material collected through *ad hoc* statistical agency. Secondly, when statistics are collected through administrative agency, such part of the material as might be urgently required becomes immediately available to the administrative agency. For instance, statistics relating to regions of special interest are often urgently required for a variety of purposes by the Government of a State. Besides, there is often a considerable amount of experience and knowledge other than the statistics proper which accumulates during the process of the collection of statistics. This can be

of use only when the statistics are collected by the administrative agency concerned. Another point to note is that while our proposal to spread the complete coverage over a period of say five years, will reduce the work load of area reporting to one-fifth of its present burden, it will nevertheless leave the 'sample' sufficiently large to make possible area estimates down to the tehsil level. In so far as the villages covered in any year are not exactly representative of the whole tehsil or district because the same villages will be covered in a periodic rotation, there will become apparent after two or three rotations, a periodic element in the annual estimates. It would then be possible either to revise the allocation of the villages between different years so as to reduce the periodic element or if the latter is not large to correct the annual estimates in subsequent years for the small periodic element.*

3.4. As noted earlier, the present reporting of area statistics is not done everywhere on a uniform basis. The method of accounting for mixed crops is, for example, a point regarding which there appears to be considerable variation of practice. Similar is the manner in which the areas under the bunds and boundaries of fields are accounted for. There is obvious need for uniform procedure in these matters which will be related appropriately to the procedure of yield estimation. Area under a number of vegetable and fruit crops are also not available on a satisfactory basis. It would be desirable to show them separately for each vegetable and fruit crop where such crops are important.

3.5. With regard to the estimation of yield, the unsatisfactory character of the traditional method of fixed standard or normal yields and annual estimation of the condition factor is now well recognised and the method is being replaced by the method of crop cutting experiments. The extension of this method to all crops and to all areas according to the programme of the ICAR should normally lead to the desired improvement in the yield data. Not all agricultural crops are, however, amenable to this method. For instance, the garden crops growing vegetable and fruit in small patches spread over a large area either of very short duration or of which the fruit is picked in a series of frequent instalments might need other methods to estimate their yields. In such cases the yield is likely to be more stable than that of the more extensively cultivated dry crops so that in these cases special subject studies relating to yields and costs might be more fruitful than the annual estimation of average yields.

3.6. The aim of the yield estimation should be to provide estimates of agricultural production at least down to the district level within a reasonable margin of error. It is difficult to prescribe the desirable

*The Chairman reserved his opinion on the view expressed in this paragraph.

accuracy of the district estimates. But the error variation in the district estimates should at least be less than the usual annual variation in them. It is by no means certain whether the method of the crop cutting experiments is capable of furnishing such estimates within reasonable expenditure. Until that is established, possibilities of other more expeditious and less expensive methods should be examined. From this point of view it is well worth examining the results of the traditional methods of yield estimation against the results of the crop cutting experiments. Though the traditional method has been justifiably criticised and rejected as unscientific, we are not aware of any critical examination of its results in the light of the results of the crop-cutting experiments now becoming available. Such an examination might suggest possibilities of improving the method and making it serviceable. It is worthwhile, for instance, rejecting both the notions of the standard yield and a condition factor to be estimated by the patwari, but instead asking him to estimate the crop yields directly in terms of so much per acre. It might be worthwhile attempting to supplement such official reporting by similar reports from informed cultivators. It might be for instance worthwhile to define the notion of the standard or normal yield as the crop condition in a recent year, and asking the reporters to report on the current condition with reference to that year. It is obviously possible to suggest many modifications which might be attempted in the traditional method. We wish to impress the need to have the district estimates of agricultural production within the reasonable margin of error and, of course, within reasonable costs. Therefore, if the method of crop cutting experiments is likely to prove too expensive for this purpose, there should be no objection to combining it with the traditional method with suitable modifications; for, after all, it is that method in modified forms that forms the basis of crop estimation in the United States of America and many western countries. It should also be noted that that method alone has possibilities of crop forecasting for which purpose the method of crop cutting experiments is obviously not suited.

3.7. The statistics of agricultural prices are to-day in a chaotic state. There are any number of price series, all haphazardly collected, and there are divergences in the prices collected by different agencies for the same product within the same area. While differences in prices may arise in view of product differentiation, or to some extent, in view of price inflexibilities in a country of big distances and poor communications, doubt arises about the generality or representativeness of the prices or price averages available in view of the large reported divergences. The harvest prices available in the Season and Crop Reports are known to be of doubtful validity; the Imperial Bank quotations of harvest prices are known to be wholesale prices (during the harvest period) in big market towns where the Imperial Bank has branches. Quite frequently these harvest prices are found to be higher than wholesale prices given in Government gazettes, etc.

3.8. In the sphere of agricultural produce the best approach would be to classify markets rather than prices, *i.e.*, instead of talking in terms of producers' prices, traders' prices, harvest prices, etc., it would be best to talk of prices at certain types of markets. No attempt to collect village prices need be made. Consumer prices at the regular weekly or other markets are the most significant and producer prices at the village level are apt to be more mixed with other transactions than those at regular markets. Also the field is extremely wide. Two main divisions of rural markets appear to be (1) markets on which the sellers are, in the main, producers and (2) markets on which the sellers are in the main intermediaries. The first category could be further divided into (a) special commodity markets and/or markets which are regulated in some way, and (b) general and unregulated markets. Category (2) could also be subdivided into large city markets, specialised commodity entrepot centres, etc. There is an enormous amount of price data collected today by a variety of agencies, the bulk of which is put to no intelligent use. A preliminary analysis of types of markets could lead to a great deal of rationalisation of the work of collection of data and, as a consequence, to a more systematic and more prompt presentation and publication of the material.

3.9. Among price data consumer prices are better covered than producer or intermediate prices. Consumer price data which enter into the urban cost of living indexes are the best organised. The chief defect in them appears to be the somewhat exclusive focusing of attention on items entering into working class consumption. It needs to be examined whether some items which do not fall within this field should not in addition be covered by the same agencies. The rural consumer prices are, however, not adequately looked after. The LB has made one systematic effort in this field, but the choice of its original centres was heavily biased by such requirements as the location at a railway station. Collection of rural consumer prices has, therefore, yet to be systematised. There would be no difficulty in combining this with collection of other rural prices.

3.10. To be useful, price statistics, as different from many other statistics, need a more frequent collection and more prompt publication. Apart from their use in national income computation, the price statistics when properly collected and promptly examined are also likely to be useful guides for day to day policy in various fields. From this point of view, an integrated examination of all price statistics, agricultural and non-agricultural, by a single body is likely to prove useful and economical. The size of the statistical mass of price data might be judged from the fact that an average of 100 commodity prices from at least one centre from each tehsil of the Indian Union would give 200,000

price quotations. It is obvious, therefore, that their handling and analysis would prove more difficult than their reporting. The objectives and basis of price data collection therefore need to be carefully examined.

3.11. Data regarding costs of cultivation are extremely meagre in India. Special importance also attaches in this country to the computation of inputs in physical terms. We consider the problem to be important enough to be given special attention. The data involved are, however, of a different type than those that can be collected in routine administrative collections. Data on cost of cultivation relate to what might be described as structural relations in particular economies which would naturally be more stable than the annually fluctuating items. It would be advantageous therefore to obtain such data from farm management or cost of cultivation studies undertaken on a small but intensive scale by academic bodies and research institutions.

3.12. The existing information on livestock numbers and products is very unsatisfactory. For improvement of data relating to the livestock sector, we have to improve both the quality of information on number and yield rates, and the periodicity of the availability of information. Our principal recommendation regarding the statistics of livestock is that the present quinquennial census of livestock should be converted into annual partial census with full coverage to be attained in five years*. As the census is usually carried out by the primary revenue agency, the partial annual census will distribute more evenly the burden that falls on this agency every five years. In fact the census might be undertaken every year in the same one-fifth villages in which crop inspection for area reporting would be done according to our earlier proposals. This will also make available more continuous estimates on livestock numbers.

3.13. Yields of many kinds of animal products do not share the characteristics of agricultural crops and hence need not be obtained from annual reporting on any extensive scale. Estimates of yields of products like milk, wool and eggs could be made on the basis of the relevant livestock numbers, if satisfactory yield rates per animal type are established. Similarly the estimates of products like bones, hides, blood could be made on the basis of rates of such product per animal slaughtered or dead. It would be appropriate to obtain information regarding these yield and other rates from intensive small scale periodic studies into livestock economics by academic bodies. The above does not, however, apply to such data as the annual number of livestock slaughtered for meat. Information regarding these can be made available by slaughter houses and Government should require local authorities and others responsible for the maintenance of slaughter houses to make full returns to State Governments in prescribed forms.

* The Chairman reserved his opinion on the view expressed in this sentence.

3.14. Regarding forest area, the available forest department figures are not very unsatisfactory. There is, however, great delay in release of the figures and an effort should be made to avoid this. Moreover, a stricter definition of forest area should be introduced and the present practice of including certain lands not under forest should be avoided. Little is known about deduction necessary for the derivation of the net value of output of forestry. A few studies on forest exploitation, if undertaken, will lead to an improvement in the basis of netting adopted in this report. The Indian Forest Research Institute may fruitfully undertake some work in this direction.

3.15. As regards products of fisheries, particularly, the annual catch of fish, we understand that the ICAR is evolving a method requiring physical observation by observers posted all along the coast. We do not have the full details of these schemes nor the results thereof. Perhaps the schemes are yet in the experimental stage and it would be premature to judge their efficacy. Nevertheless, even supposing that as an experimental scheme the method gives promising results, we have some doubts as to its practicability as a routine operative procedure. Therefore, though the ICAR schemes might be continued on an experimental basis to aid evolving better techniques of measurement, we suggest that for estimating products of fisheries, two other approaches might be tried. One is a periodic census of persons, boats and nets engaged in fisheries coupled with intensive studies of their operational economies. The first could be done through State departments of fisheries wherever they exist or through the State bureaus; the second could be done by fishery schools or other research institutions. The second approach would be through collecting data relating to the processing and marketing of fish and fish products. A combination of the two methods should yield, though not necessarily complete, nevertheless usable estimates of products of fisheries. Apart from the present absence of estimates of products of fisheries, there is almost complete lack of systematic knowledge of the basic practices and working of this economy. We recommend that special studies in this field should be encouraged and assisted.

3.16. While the collection of data relating to factory industries is facilitated by the comparatively better organised character of the producing units, the main defect in statistics of factory production is that the CM does not cover all of them regularly. Until recently, statistics relating to factory establishments have largely been the offshoot of labour legislation and labour welfare policy, and for a limited number of industries, of tariff and commercial policy. Hence, even while requirements of basic production data led to the collection of a variety of new statistical material relating to this sector, the data collected were restricted in scope. Under section 2j of the Factories Act of 1934, factories were defined as establishments employing 20 or more persons and using power, and while

section 5(1) of the Act also included factories employing between 10 and 20 persons and using power and those employing 20 or more persons and not using power, the notification of such factories was left to the discretion of provinces. Despite the revision of the Factories Act in 1948 (to include all factories employing 10 or more persons and using power, or employing 20 or more persons and not using power), the CM is still restricted to factories defined under section 2j of the Factories Act of 1934. The CM suffers from the further defect that it covers only 29 groups of industries out of a possible 63, leaving out some quite important industries out of its scope, and also does not extend to the entire Indian Union territory. A sample survey of manufacturing industries for 1949-50 was undertaken by the DIS to fill this gap.

3.17. While there should be no objection to sample enquiries filling gaps left by the annual census we would be opposed to any move that negatives the good beginning made by the DIS by initiating the annual census of manufacturing industries. We say this because instead of trying to make good its deficiencies in regional and subject coverage, there has been apparent, in recent years, a tendency to replace the census itself by means of a sample survey. If an annual census of manufacturing industries is not manageable, it should be made manageable by spreading it over a number of years. But it does not seem advisable to replace this systematic record by means of sample estimates. There are various ways by which the annual census may be distributed over a number of years. Firstly, there is the method of partial annual census with full coverage in three or five years, which we have mentioned in connection with the crop area statistics. In relation to the census of manufacturing industries, the method might be modified in various ways. Thus the units to be covered in any year, instead of being drawn from all groups of industries might be confined, if that appears more convenient, to only a few groups of related industries which (groups) in the particular year might be fully covered. Or preferably, only the larger units in the more important industries might be covered every year while the remainder might be covered by a partial census spread over three or five years. There are more variations and the one which is most suitable to administration might be adopted. We feel, however, that the basis of this collection should be a systematic census and not a random sample survey.*

3.18. In addition to what is available in the CM, statistics of factory employment are also furnished by the LB. These statistics are available on annual basis and it is important that they should be continued. However, it is necessary that the scope of the statistics of employment published by the LB is clearly defined, their difference, if any, from the employment data available through the CM accounted for and the two sets made comparable. This work should be done by the LB itself.

* The Chairman reserved his opinion on the view expressed in this paragraph.

3.19. The IBM is expected to collect new statistical material under the Minerals Conservation and Development Rules and this material should help to fill in deficiencies in existing minerals statistics. The most important gap in the sector from the point of view of national income estimation is the absence of any material on the purchase of goods consumed in the process of production, except for coal consumed in the collieries; and this gap will be filled only when data are forthcoming under the Minerals Conservation and Development Rules.

3.20. The official annual estimate of employment in mining industries is considerably below the 1951 census estimate of working force in mining industries. This indicates that there may be a fairly large underestimation in mining employment statistics arising probably out of inadequate coverage of unorganised quarries, etc. We recommend that efforts may be made by the IBM to examine the discrepancy and to take adequate measures to fill up the gap.

3.21. The whole field of small scale industry is inadequately covered or almost not covered at all today. This happens in relation to all aspects, employment, cost structure, income, output, etc. Even in the important field of handloom weaving of cloth, the estimated production is based, for the major part, on estimates of yarn consumed by the handloom industry rather than on direct data relating to the production of the industry. Our present estimational procedure makes use of decennial census occupation figures, for an estimate of employment in industry, from which employment in small enterprises is derived as a residual after factory employment is taken out. Apart from the usual defects of census data, namely, timeless character of the estimates and vagueness and changing character of the definitions, these data tell nothing about actual employment. While this defect would not significantly affect household enterprises producing mainly for self-consumption, it is particularly important in respect of industries like handloom weaving where price disbalance or shortage of yarn can put the entire industry out of gear. Unfortunately we have no evidence on which to adjust for such situations; we have only got a few case studies which indicate to us the nature of the problem and consequently, the rough character of our estimates in this sector. The Planning Commission in its draft outline report has considered the possibility of dividing markets or spheres of production in major industries as between the artisan or cottage and the machine or factory industry. Any satisfactory way of effecting this would involve considerable control and periodic collection of information about the two activities within which a division is made. In this case it is apparent that data will be available for all those sectors between which a division of markets or spheres of production is attempted. Such data may not, however, fully cover employment and the attempt, if made, will be concerned with only a small number of industries. The improve-

ment of data relating to employment and production in small scale industry thus constitutes a difficult problem. Nevertheless in view of the importance of this sector from many points of view, it is necessary that systematic attempts be made to collect information relating to it. We recommend that State bureaus should pay particular attention to this field, especially in relation to employment and earnings therein. Our recommendation applies both to the urban and rural sections of small scale industry.

3.22. With regard to the data relating to the cost structure of this sector, it will of course be more stable. These data should therefore be collected as part of special studies to be undertaken by academic bodies or research institutions. Nevertheless, in view of the extent and variety of economic activity in this sector, we recommend the following course of action. Each year, the Government should initiate, through State bureaus and non-official agencies, an integrated programme of special studies all over the country directed towards one or two selected industries. Thus in one year, studies might be initiated all over the country, to study the economy of handloom weaving or oilpressing. Such studies should be planned and directed by a central committee of direction and a comprehensive report prepared. Apart from their value to national income computation, such studies will furnish an integrated knowledge of the working of various small scale industries and of the problems associated with them. It is likely that all-India organisations specially set up to encourage or protect small scale industries will actively interest themselves in such a programme.

3.23. The trading sector is another field where information is scanty in regard to both employment and income. In recent times, a new source of information appears to have become available. The sales tax has now become an important fiscal instrument in every State; and the sales tax administration should be capable of providing very valuable statistics relating to trading activity. The information yielded would, of course, depend very largely on the type of the sales tax imposed. However, certain possibilities may be indicated in a broad way. Wherever any stage of transaction is exempted from the tax it should be possible to ascertain the numbers exempted at each such stage and possibly also the volume of transactions at that stage. Wherever there are any categories who pay the tax in fixed lump sums without a calculation of turnovers, statistics relating to these categories could be separated from those of others. Statistics relating to commodities subject to special rates could as far as possible, be presented separately for each such item. The general data may be presented in relation to a classification of types of shops or establishments and in relation to classes of turnover of the assessees. The classification both in respect of types of shops and the ranges for classes of turnover should be adopted on a uniform basis for all States in India. The commodities in which trading

is specially licensed, as for example, petroleum, should also yield useful data. In order to ensure that suitable action is taken for making possible such utilisation of sales tax data, we recommend that this item be taken up by the Central Government with the State Governments at the next conference to be convened by them of State sales tax administrators. As regards trade margins and distributive costs, we recommend that structural studies of the type we have indicated in respect of agriculture, livestock and small industries be also undertaken in this field.

3.24. Another sphere in which the present regulatory systems should yield important data relate to producers' durable goods and capital equipment, especially where it is imported. Import data are available by fine break-downs, and give a reasonably complete picture of imports of durable producers' goods, except in certain cases where it is difficult to separate statistics of consumer use from those of use for business capital expenditure, *e.g.*, purchases of, say, automobiles, typewriters, etc. Even when capital equipment is not imported, the present capital issue control and the control that might be exercised through the Regulation of Industries Act should require and enable information to be collected on capital investment in plant and machinery and capital expenditure on replacements which should be useful for framing estimates in relation to important aspects of capital formation. The difficulty of combining the two sets of data would, however, be that while the former relates to flow of commodities, the latter will supply only financial statistics of industrial investment. To complete the picture of the commodity flow for investment purposes, one requires information about the domestic output of commodities with detailed break-downs. These are not yet available, although an attempt is being made to collect information regarding industrial output and sales directly from producers by the Development Wing of the Ministry of Commerce and Industry. When further progress is made in this direction, information on total sales in the country of particular types of capital goods may not be difficult to compile. In the meantime, we recommend that existing material on such capital formation should be brought together and suitably processed for publication by the NIU.

3.25. Another sphere in which some improvement of present practices would make useful data on economic or production activity available is that of building construction. House construction within many municipal, etc., areas is regulated. However, the system of regulation does not yet yield useful statistical data. For this to happen it would be necessary to introduce certain broad divisions within the field of permits granted for building operations. A tentative classification may be suggested, as follows (1) construction of independent structures (2) major alterations in or additions to existing structures (3) repairs and minor alterations in or additions to existing structures. Estimates of costs of the work permitted, whenever such information is asked for under the

regulations, should also be included with the statistics tabulated so that under each broad head the number of entries in the different classes could be noted. Wherever there is provision for the issue of a completion certificate in addition to that of building permits similar statistics may be maintained regarding these certificates. This would not only serve as a check on the permits data but may also yield valuable indications regarding the pace of building activity from period to period.

3.26. As regards transport, data regarding employment and income are available only in regard to railways. Similar data are not available even in regard to motor transport undertakings of State Governments. Further, no information is available regarding privately owned motor transport as well as other forms of rural and urban transport. It is important to get adequate information about this field not only for more correctly assessing the contribution of the transport sector to the national income but also for more correctly calculating trading incomes. We recommend therefore that (a) an annual report should be prepared by the Central Ministry of Transport bringing together all available statistical data regarding State transport undertakings and (b) structural studies of the type we have indicated in regard to agriculture, livestock, small industry, and trade should also be undertaken in respect of all forms of urban and rural transport.

3.27. It has been pointed out that in the national income estimates compiled by us certain gaps left by product estimates are filled in by estimates regarding income. An attempt has been made so far to indicate how in some directions the product estimates could be extended or be further improved. We shall now turn to the possibility of compiling adequate estimates on the income side so that ultimately a double set of figures, comparatively independent of each other may be obtained for national income estimation. In income estimation great reliance has to be placed at present on the classification of occupations. This classification of occupations is unsatisfactory and the need to rely on it for the basic occupational division of the population must be considered as one of the weakest links in Indian national income estimation. The Census of 1951 has attempted some improvements in occupational classification. Thus the census is now designed to give a rural-urban breakdown and also a classification by employment status of the employed population. In the latter classification the category of the 'employees' persons is likely to be useful. As a first step, we recommend that an attempt should be made to muster together all statistics of wage or salaried employment from all possible sources for the period approximating the census period and compare them with the corresponding census statistics. An examination of the resulting discrepancies will throw light firstly on the limitations of the census data and secondly on the coverage of the other sources. Secondly it should be examined as to which of these sources are available or can be made available with moderate effort

on a continuing basis. A number of such series should be possible. The first one would be the statistics of factory employment covered by the Factories Act and which in one way or the other should be covered by the CM and/or by the LB. For industries covered by the workers provident schemes, more intensive employment statistics should become available. The second would be the employment in all corporate businesses governed by the Company Act. It might be considered whether statistics of employment could be included in their annual returns. The third is the employment in the public sector consisting of the Union and State Governments, district and local boards, municipalities and other local governments as also the public corporations. When Government obtains so much from the commercial and industrial concerns in the form of statistical returns, it would not be too much if the statistics of employment in all these bodies are also expected. Next is the employment in all forms of cooperative institutions, schools, charitable institutions and other non-profit making bodies governed by registration of societies. Lastly is the employment in shops and other establishments requiring licensing or other regulation such as of conditions of employment by the State and local governments. If these categories cover a substantial number of the employee population, the residue might be estimated by statistical adjustments and a satisfactory series of employee statistics would result.

3.28. Certain classes in the category of 'self-employed' in the census classification would also be of interest. An attempt may be made in the same way as above to muster corresponding statistics from all possible sources and compare them with the census categories. Important among these are professions requiring licensing, such as the medical and the legal. The registers of the licensing bodies might be examined from the point of view of their comparability with the census returns. Other important source material would be from the licensing of certain minor professions and shops and establishments by the State and local bodies. The objective would be to try to build employment series from independent sources and to indicate their coverage in relation to the census coverage and classification so that the occupational structure during the inter-census period might with some approximation be judged. This is a field which requires considerable analytical work and we anticipate many difficulties.

3.29. In relation to the employee population statistics of employee compensation, that is payment of wages, salaries and wage supplements, should be comparatively easy to obtain and establish on a continuing basis. In the above, we have classified the employee population in a number of principal categories in which the statistics of employment might be made available. If this is found difficult, it might be considered whether at least the annual statistics of total wage and salary payments together with other constituents of employee compensation

such as provident fund, pension and social security contributions might be called for in the annual returns of various types of establishments. We recommend that these statistics should be obtained in the form of regular returns from all bodies we have mentioned in the above and any others which can be so regulated. Apart from their use in the computation of personal income component of the national income, these statistics would be of considerable interest in themselves. For instance, it would be of great interest to know what part of the total employee compensation is covered by pension, provident fund, insurance and other social security schemes. It would be desirable to entrust the handling of the collection and analysis of all these statistics of employment and wages to a single body. Among the existing statistical offices of the Union Government, it appears to us that the LB would be the best suited for this purpose. We recommend therefore that the scope of the LB statistics should be extended to all employees.

3.30. The principal categories of employee compensations left out so far are the payments to farm labour and to domestic servants. Payments to farm labour are important both in their magnitude and in their economic bearing. They include salaries, and wages paid in cash and kind supplemented by all kinds of wage supplements to a large body of employees often employed for very short durations and under very irregular conditions. A routine collection of these statistics on an annual and continuing basis does not seem therefore possible. It is also not certain that such payments would bear any stable relation to other factors in farm economies which might be evaluated by intensive studies. In this connection we may refer to the idea of the agricultural census that was mooted at the time of the census of 1951. The contemplated census might have afforded information on a number of important points that have to be covered for estimating employment and output in agriculture. However, on account of the large measure of annual variation in this activity a decennial census would not have proved of much help in annual estimations. For this purpose a more continuous collection of data is necessary. A satisfactory solution might be the institution of an annual rotational agricultural census on lines recommended by us for crop reporting and livestock numbers. However, this must, under present conditions, be considered a somewhat distant ideal. In the meanwhile, it would be desirable to encourage efforts by State departments of revenue or agriculture or State bureau of economics and statistics which seek to gather continuous information regarding the tempo of agricultural activity. We would draw attention to the survey of employment and earnings in rural areas conducted for some time by me Bombay Bureau, which unfortunately seems to have been discontinued. All such work is important from the point of view of State authorities being in touch with current variations and developments and any data that throw light on current variations in employment, output

and earnings will prove of the greatest value in national income estimation. We recommend therefore that State Governments should collect annual data on the subject by conducting surveys of employment and earnings in rural areas. As regards domestic servants we recommend that income studies should be undertaken in different regions of the country in both urban and rural areas on the lines of the structural studies we have recommended for other sectors.

3.31. Statistics of personal incomes of the self-employed are more difficult to obtain. The income of the self-employed, namely, the farm operators will have to be obtained from the production end for some time. Reference has also to be made to small scale industries. Incomes of the self-employed in these can only be obtained as special type studies. The two together, will cover a large majority of the self-employed in the rural areas. In the urban areas, there will be a large component of independent professional practitioners. Besides these, there will be traders who will be found in all areas. We do not think that any systematic data collection is possible in respect of incomes accruing to these. The national income computation in these respects must make use of miscellaneous and fragmentary data such as the income-tax returns, trade margins indicated by wholesale and retail prices, etc. We have, therefore, no specific recommendations to make for collection of new data in these fields except that special studies should be encouraged and assisted, especially socio-economic surveys of selected families in rural and urban areas.

3.32. Other components of personal income are interest, dividends and rentals. Payments of interest and dividends by corporate businesses should be available from their annual returns. Interest payments in relation to rural debt constitute an important aspect relating to which estimates are not usually made. During the last 15 years considerable data have accumulated in this regard. There have been many schemes of debt adjustment which ask for full returns regarding debt and legislation regarding registration or licensing of moneylenders with provisions for inspection of their operations. Many debt enquiries have also been undertaken, on a large or a small scale. The sphere of co-operative finance is increasing in most States. All these should help in estimation. Interest receipts of private moneylenders might be obtained by adjustments from the bench mark data largely furnished by previous credit surveys. Co-operative society operations could be studied from annual returns. Estimates of rental incomes obtained by land owners may now become available in a more extended measure through operation of the various laws regulating the status of tenants and rental charges that can be imposed on them. As regards rentals of houses, there is need for systematisation and regular compilation of the municipal returns. Special studies might also be undertaken to study the relation of the property

tax returns of the municipalities and the income from real estate, actual and imputed, accruing to the property owners. We recommend that the NIU should pay early attention to the implementation of the suggestions made in the paragraph.

3.33. Improvement of income tax data, both in respect of coverage (*i.e.*, by elimination of evasion, lags between tax accruing and tax paid, etc.) and presentation (*i.e.*, total income rather than income assessed to tax; distribution of personal income), will fill a major gap in income statistics. We understand that efforts have already been made to present the available data in a more useful form; but the income tax data, as at present collated, cannot be as useful as, say, in the United Kingdom owing to certain aspects of the Income Tax Act. Apart from the complete omission of agricultural incomes and all incomes below the minimum exemption level, our present income tax statistics can only tell us about the distribution of earnings by assessees which include not only joint families but partnerships and businesses. Thus distribution of personal income cannot be estimated from the present tax data. A not often noticed handicap in using the existing income tax data is the omission from income tax returns of agricultural income accruing to assessees; to the extent any important part of income assessed to income tax is in respect of agricultural incomes, a distribution of incomes based on the present returns of income would be misleading. Agricultural income tax is levied in a few States. An important tax reform which is likely to be generally undertaken is that of the imposition of an agricultural income tax in all States. The imposition of income tax on agricultural incomes in all States would remove this defect to a considerable extent especially if its administration is related to that of ordinary income tax. It would further make available data relating to income and further details presumably relating to gross and net receipts in a field of economic activity which though important in India is one in which the least amount of statistical data of this sort is available.

3.34. We have estimated the income originating in public sector from an analysis of the published accounts. The procedure enabled us not only to estimate the contribution to national income but also to give a somewhat detailed presentation of various transactions of these sectors. Available data, in general, proved adequate for our purpose. Certain minor difficulties encountered relate to (a) delay of release and lack of detailed breakdown in respect of summary statements on the accounts of various local authorities and (b) lack of details in the published accounts of the public enterprises (including construction) and also in the fund accounts. We recommend that the CSO should take suitable steps to rectify the former shortcoming. Regarding the latter, the possibility of improvement should be explored by the Ministry of Finance in collaboration with the NIU.

3.35. It would be observed that we rely for the major part in the improvement of national income data on the existing reporting systems or the extensions of such systems as a result of further activities by the State. Apart from the elaboration of work of special agencies such as the ICAR or the DIS or any extension of work or special surveys undertaken by them or other organizations like the RBI or academic bodies and research institutions, it is our opinion that it is safest to look to the data arising out of normal administrative working and normal reporting by establishments or persons themselves. Apart from what we expect to be the extensions of such a reporting system, the rationalisation and co-ordination of even the data at present reported would in our opinion lead to considerable progress in the field of national income estimation. As supplementary to the data arising from normal governmental activity we would lay emphasis, in the particular context of national income estimation, on planned intensive studies which would enable students to process the data and to provide the necessary break-downs and to make an analytical study of concepts, procedures, etc.

3.36. We have attempted in the above to cover the entire field of statistics required for national income estimation and made various recommendations for their improvement. We recommend that the NIU should prepare a periodic report on the progress made in the matter of this improvement and submit it to the Advisory Committee which we recommend should be set up in chapter 4.

3.37. The subsequent paragraphs of this chapter are devoted to the NSS which was established in 1950 as a continuing sampling organisation. The major objective of the NSS is stated to be the quick collection and tabulation of data needed by Government. We are, however, not concerned with examining this aspect of the survey, nor are we concerned with its organisational problems. We are concerned solely with the statistics made available by the NSS for the compilation of national income estimates and our examination of the survey is limited to this aspect only.

3.38. So far it has not been possible to make any significant use of the material thrown up by the survey for national income estimation purposes. While our income estimates are computed partly by evaluation of production and partly by estimation of income, the NSS data on these broad fields collected during the first round are neither adequate nor are considered sufficiently reliable; data collected in subsequent rounds have not yet been fully processed. Thus, at present apart from some minor items, the survey data which could be utilised for our purpose relate either to certain estimates of cost structures, or to certain values and prices.

3.39. It should be pointed out that in future also a large part of the requirements of national income estimation will have to be met through the data normally collected by the various organs of the Government at the State and at the local authority levels. The NSS by its very nature cannot replace this process. Moreover, estimates of variation in employment, production, etc., will be required at the level of tehsil or taluqa or a small group of comparatively homogenous tehsils or taluqas for current administrative purposes and for the implementation of detailed physical planning by State and local authorities.

3.40. It is therefore necessary to build up sufficient field agencies of State Governments. A number of State Governments already have their own statistical bureaus. We think it is a matter of high priority that States which do not have such bureaus should institute them. The CSO should play an important part in helping to raise the activities of the State statistical agencies up to a minimum standard of performance and in securing the required measure of uniformity. Central aid, technical and financial, for achieving this objective should have high priority. The normal collection of statistics as by-products of administrative activities should be left with the appropriate departments of State and Union Governments. The advice of the CSO and the NIU will of course be available to all these agencies. In all this work due attention should be paid to the needs of estimation of national income and related totals.

3.41. Consumer expenditure, on which the NSS has in the beginning laid so much stress, is a field of study where much more experience needs to be obtained before one can pass any definite judgment on either the reliability or the utility of the material for national income estimation and analysis. One view of the matter is that, under Indian conditions, it would be very difficult to obtain reliable data on a subject like this where, even in countries with advanced industrialised and monetised economies with ample financial resources and fully literate populations, no attempt has been made so far on a national scale either to collect data on consumer expenditure or use them for national income purpose. According to the same view, it is also difficult to see what precise use could be made of such data for policy purposes in India and it is contended that more useful results could be obtained by incurring the same expenditure on other types of investigation. Another view is that, in spite of all its limitations, consumer expenditure data collected by the NSS could, with increasing experience, be used as a check on national income data obtained by the product and income approach; and also that it could be used, perhaps at a later stage, for estimating social accounting flows and for macro-economic analysis useful for policy purposes. The Committee as a whole does not express any opinion on this question. If, however, the NSS is going to continue to collect such data, we feel that the investigations are planned and the data collected are processed in such a manner as to yield maximum advantage for purposes of economic analysis.

3.42. The NSS, if continued, can also be used for collecting data on a number of items in the national income field on which at present but little information is available. Thus, for example, capital formation in rural areas, involving as it does physically observable data, can be one such item. The extent of the non-monetary sector, income of artisans and other non-agricultural workers, income of agriculturists from subsidiary occupations, analysis of earners and working dependents, duration of employment for both agricultural and non-agricultural workers, rural housing, harvest prices and village trade margins, income from rural transport, all these are subjects on which, with careful planning of investigation and analysis of data, some light can be thrown by the NSS with advantage to national income work. Moreover, there is at present a very inadequate understanding of the structure of the Indian economy; and if different items are taken up one by one for national investigation or if a concentrated attempt is made at investigating regional economies, the resulting material properly analysed, would be useful not only in improving national income estimation but also in the vital field of national income research and analysis.

3.43. We would, however, emphasise one aspect in which we feel the NSS needs considerable strengthening if it is to continue and be made useful for national income work. National income work is essentially a part and an important part of applied economics. The type of data that needs to be collected, the manner of its collection, the planning of the investigation and the processing of the data collected are all matters which fall as much within the technical competence of the economist as of the statistician; while an economist is almost exclusively concerned with the analysis and use that is to be made of the material. It is therefore essential that in the planning, conduct, processing, and analysis of the national income work to be carried on by the NSS, the economist's services must be drawn upon to a large extent. Indeed, what is needed is an integrated approach; and the collective and co-ordinated functioning of economists and statisticians at all levels, if the NSS is to be successfully used for assistance in national income work. At present, however, the NSS is carried on by the ISI, which is primarily a statistical organization. We would suggest therefore that, in respect at any rate of national income work, the NSS should be planned and operated under the guidance of a strong technical committee which would include economists of proved competence. In fact the Planning Commission has already set up a Research Programme Committee which consists of statisticians, economists and other social scientists; and this body is engaged in planning and guiding research work that is connected at various points with the national income work of the type we have been discussing in connection with the NSS. We recommend therefore that close liaison should be established between the NSS and the Research Programme Committee

of the Planning Commission; and that a joint body drawn from this committee and the ISI should be set up to look after the work of the NSS in connection with national income work. This joint body should make periodic reports to the Research Programme Committee and through them, to the Planning Commission who will then determine how and to what extent this work should be modified, strengthened and expanded. In this manner, full use could be made by the country of sampling techniques and statistical and economic organisations in improving the coverage and quality of national income data, strengthening the field of fruitful economic analysis, and enabling its use for purposes of planning and economic development*.

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* The Chairman reserved his opinion on the view expressed in this paragraph.

Chapter Four

RECOMMENDATIONS ON INSTITUTIONAL SET UP FOR CONTINUED WORK IN NATIONAL INCOME

4.1. Work on national income can be contemplated at different levels. We may think of work connected with estimation of certain aggregates and accounts relating to a past period. This process of estimation involves a study of concepts and definitions, a critical examination of available statistical material, and the using of the material for arriving at the estimates. In the absence of a more appropriate term, we will speak of this type of national income work as the compilation aspect of national income estimation. Another aspect of the work relates to the utilisation of the national income estimates and other relevant data to find out the possible course of these estimates in future, and also to find out the hypothetical courses when a given set of policy decision is taken. This type of work, which makes the national income estimates useful for policy purposes, may conveniently be called the budgeting aspect of national income work. There is also need of continuing research work an important aspect of which is economic analysis.

4.2. Obviously, the basic work is that of compilation. For this purpose we recommend that the NIU be placed on a permanent basis. The main work of the NIU will be the compilation of annual estimates of national income and its various breakdowns based on a study of all continuing series of governmental statistics and other ancillary information. The estimates prepared by the NIU should be presented in the form of an annual paper analogous to the White Paper on national income in the United Kingdom.

4.3. An essential part of the work of the NIU should be to maintain contact with all agencies concerned with the collection of data to secure a continuous improvement of official statistics from the point of view of national income estimation. This work must, of course, be undertaken in collaboration with the CSO and other agencies interested in the improvement of official statistics. Also, the NIU should have an opportunity to review all new proposals for the collection of data by central agencies from the angle of national income estimation.

4.4. General lack of critical examination of statistical material on the part of the departments concerned, has, in our experience, been a serious difficulty in the work of national income estimation in this country. Definitions and concepts used by the departments are sometimes only imperfectly known to them. As a result of this, the NIU had to devote a great deal of time to these problems. With the inauguration of the CSO, it may be noted that a large part of this work has devolved on this institution and hence the burden of work in the NIU is likely to diminish in

future. Offices devoted purely to the compilation of national income estimates are usually small in other countries, and the work in most cases is based on material largely processed elsewhere. Thus, in the United Kingdom, the preparation of the annual White Paper on national income is the responsibility of only two or three persons. It is not possible, in India, to carry on with so small a staff. The desirable course would be to start the permanent organisation with the present strength of the NIU.

4.5. The NIU was established in the Ministry of Finance and has been a part of the Department of Economic Affairs since its inception. While there is some advantage in continuing this arrangement, there are good reasons for transferring the NIU to the CSO*. The NIU is concerned with statistical material of all varieties which flows to the CSO as a matter of routine but which does not come to the Ministry of Finance in an equally routine manner. The CSO is also responsible for the processing and critical examination of statistical information required for central needs. As the NIU is engaged in similar work in respect of data needed for national income estimation, it follows that it will be of advantage to integrate the work of the NIU with the CSO. This would avoid considerable duplication of work at a superior level and will promote overall economy. Lastly, location in the CSO would enable the NIU to present its point of view in connection with all fresh schemes for the collection of data in an effective manner and bring about a gradual improvement of the statistics required for national income estimation.

4.6. We have already referred to the need of continuing research in the field of national income. A part of such research would, of course, be done in the NIU. There is also the need of organising research in non-official institutions and universities. To quote the First Report, "analysis, historical studies, and current utilisation of national income data in the manifold fields of economic policy are absolutely essential and can best be undertaken by non-official research workers and institutions" (p. 51-52).

4.7. It is one thing to emphasise the need of research in the field and it is another thing to suggest definite steps to organise such research. We do not think that a stage has come in which we can effectively recommend the creation of special institutions in the field. We would recommend, however, the financing, in selected research institutions, of small research sections in national income work with one or two analysts supported by the necessary computational and clerical staff. In addition, we suggest the grant of scholarships and fellowhips for research work in national income. It is understood of course that the receivers of such grants will submit from time to time full report on the work done, and it will be open to the Government to review these grants on the basis of the work done.

* The Chairman reserved his opinion on the view expressed in the sentence.

4.8. We hope that research work on national income will be stimulated in a number of research institutions and universities as a consequence of the publication of our two reports and will be sustained by the systems of grants which we have recommended in the last section. A stage will then be reached when it will be useful for the research workers in this field to come together for exchange of views and of experience. This is the appropriate time for starting a National Income Conference. In this Conference, research workers both from private institutions and from Government departments should meet and discuss their problems and plan further lines of progress. We expect that the initiative in this matter would come from the research workers themselves. The constitution and mode of operation of the body they form need not be detailed here. However, we have no hesitation in recommending that once such a body is formed, Government should give it all possible aid.

4.9. As it may take some time before a National Income Conference of the type envisaged in the last paragraph starts to function effectively, we recommend as an interim measure the setting up of a small Advisory Committee on National Income. The main function of the Committee will be to pass under review the annual paper on national income prepared by the NIU and also other work in the field and to advise Government on the institutional grants, scholarships and fellowships recommended above.

4.10. While we have not been able to accomplish much, we feel that we have at least laid down a proper foundation for the work of national income estimation in the country. We hope that rapid strides will now be made, and we envisage that, in near future, accumulated knowledge in the field will be sufficient for planning purposes or policy decisions.

P. C. MAHALANOBIS,
*Chairman.**

D. R. GADGIL,
Member.

V. K. R. V. RAO,
Member.

M. MUKHERJEE,
Secretary.

NEW DELHI,
14*th February*, 1954.

*In my opinion it is for the National Income Committee to indicate what new data should be collected or what improvements are necessary in the information at present available. It is the function of statisticians to consider what technical methods would be most appropriate: and it is the responsibility of Government to decide what administrative machinery or set up would be most suitable for the purpose in view.

I am signing the report subject to reservation of opinion in certain matters which fall within the sphere of responsibility of statisticians or of Government; some of the important points have been indicated by asterisks and footnotes in the text of the report. As I am making the reservations on general principles, it is not necessary to discuss the merits of each individual case ; also, my reservations do not necessarily imply that my views are different from those of my colleagues in every case.

P. C. MAHALANOBIS

COMPARISON OF NET NATIONAL OUTPUT AT CONSTANT PRICES

A1.1. We have attempted here to present rough estimates showing the variation in real output of the country. As the balance of factor incomes flowing out of the country is very small in relation to the national product, we have evaluated only the domestic product at constant prices and added to this the undeflated net balance of international factor income flows to get the estimate of national product at constant prices.

A1.2. For estimating the domestic product at constant prices we have not used the wholesale price or the cost of living index as a national deflator. Instead we have attempted to obtain indications of the measure of change in national real output by covering each main category of contribution to national income and estimating it by method appropriate for that category. The major difficulty attendant on this procedure has been the fact that in some sectors, estimation of output has been on the basis of average earnings and number of workers rather than on the product approach. But this is a difficulty inherent in the estimation of India's national income in the context of currently available data, and applying an index number of wholesale prices or cost of living as deflator does not solve the difficulty. Subject, therefore, to this inherent limitation, *viz.*, that by virtue of the basis of calculation of broad components of India's national income, these do not lend themselves easily to the task of computation at constant prices, we have followed the procedure indicated below.

A1.3. In all the sectors where estimation is based on the product approach, we have evaluated physical production for the current year at the base year prices for as many items as possible. This procedure covers the sectors agriculture, animal husbandry, forestry, fishery, mining and factory establishments and thus covers no less than 55·9 p.c. of the net output in 1950-51. We have, however, retained the base year cost/product ratios for lack of adequate data. This is the major source of error in this part of our estimation.

A1.4. In the small enterprises sector, in the absence of any suitable indicator of the movement of output, an index of consumer prices has been used for deflation purposes. In fact, the indicator used is the deflated value of the consumer expenditure on the products of small enterprises.

A1.5. The indicators in the sector 'communications' are the number of letters, etc., carried and the number of telegrams sent. The different indicators have been combined by making use of the ratio of base year expenditures. The railway product has been adjusted by a weighted average of ton-miles and passenger-miles the weights being the base year expenditures. For banks, we have used the number of cheque clearance and for insurance, the number of policies. For co-operative societies, the total membership is taken to give an indication of movement of real product. For the sector, 'other commerce and transport', since our estimate by product approach is based on the marketed surplus of goods and certain fixed distributive margins, the deflated value of marketed surplus is assumed to give an indication of the real movement of output.

A1.6. For professions and liberal arts, domestic service and house property, deflated consumer expenditure on these gives the appropriate indicator. However, for teaching and law, real indicators, *viz.*, the number of pupils in the former and the number of law-suits in the latter have been used. The output of government administration has been left unadjusted on the implicit assumption that the real net output of government administration is measured by the money-wages paid.

A1.7. It will be seen from the above that estimates of real product by industrial origin are not satisfactory. Nevertheless, they do convey some indication of the changes in real output. The estimates are, therefore, presented for what they are worth in the table below.

TABLE A1.1 : VARIATION IN REAL PRODUCT IN THE INDIAN UNION.

(Base 1948-49).

items	1950-51		1949-50		1948-49	
	Rs. abja*	p.c.	Rs. abja*	p.c.	Rs. abja*	p.c.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
sectors using product approach						
1. agriculture, animal husbandry and ancillary activities . . .	42.3	47.8	42.6	48.3	41.6	48.1
2. forestry . . .	0.7	0.8	0.7	0.8	0.6	0.7
3. fishery . . .	0.4	0.4	0.3	0.3	0.3	0.3
4. mining . . .	0.7	0.8	0.6	0.7	0.6	0.7
5. factory establishments	5.4	6.1	5.4	6.1	5.5	6.4
total .	49.5	55.9	49.6	56.2	48.6	56.2
other sectors						
6. small enterprises .	8.7	9.8	8.6	9.8	8.7	10.0
7. communications (post, telegraph and telephone) . . .	0.3	0.3	0.3	0.3	0.3	0.3
8. railways . . .	2.0	2.3	1.9	2.2	1.7	2.0
9. organised banking and insurance . . .	0.6	0.7	0.6	0.7	0.5	0.6
10. other commerce and transport . . .	13.7	15.5	13.6	15.4	13.5	15.6
11. professions and liberal arts . . .	4.5	5.1	4.6	5.2	4.3	5.0
12. government services (administration) .	4.3	4.9	4.1	4.6	4.0	4.6
13. domestic service .	1.2	1.3	1.2	1.4	1.2	1.4
14. house property .	3.9	4.4	3.9	4.4	3.9	4.5
total .	39.2	44.3	38.8	44.0	38.1	44.0
net domestic product at factor cost . . .	88.7	100.2	88.4	100.2	86.7	100.2
net earned income from abroad . . .	—0.2	—0.2	—0.2	—0.2	—0.2	—0.2
net national output at factor cost = national income . . .	88.5	100.0	88.2	100.0	86.5	100.0

* abja = 100 crores = 10^9

A1.8 We give below a table furnishing the aggregates of net national output at current prices and at 1948-49 prices along with the corresponding per capita figures.

TABLE A1.2 : COMPARISON OF MOVEMENT OF NET NATIONAL OUTPUT AT CURRENT AND CONSTANT PRICES

	net output (Rs. abja*)		per capita net output (Rs.)	
	current prices	1948-49 prices	current prices	1948-49 prices
(1)	(2)	(3)	(4)	(5)
1948-49	86.5	86.5	246.9	246.
1949-50	90.1	88.2	253.9	248.6
1950-51	95.3	88.5	265.2	246.3

*abja = 100 crores = 10^9

Appendix Two

ERROR OF THE ESTIMATES

A2.1. We have already stated in chapter 2 that the overall margin of uncertainty of the estimate of net domestic product is of the order of 10 p.c. This appendix is concerned with an explanation of the procedure adopted for deriving this margin. The type of data used for national income accounting is generally not suitable for estimation of a statistically valid margin of error; and we are compelled to use more or less arbitrary methods to get some dimensional idea of the uncertainties of the sector totals and the national aggregate.

A2.2. An idea of sectoral errors can be formed in different ways:—

(i) Occasionally the basic statistics used may give some idea of the sampling error involved. Thus, the figures of earnings used in the sector of small enterprises showed a coefficient of variation of the order of 50 p.c. This may give an approximate idea of the margin of uncertainty even when the data used are by no means a random sample over the universe. The estimate of working force also is subject to error an estimate of which can be made on subjective grounds. The two errors then can be combined on certain statistical assumptions. The resulting margin of uncertainty will not be entirely subjective but the subjective element will form a large component. A similar procedure is applicable in respect of the yield rates of certain crops for which proper sampling errors are available.

(ii) Subjective estimates of a number of estimators may be averaged in order to eliminate (individual) personal bias; and the difference between the different estimates would supply some information on the margin of uncertainty.

(iii) Where the estimates are prepared by two independent methods, the difference between the two estimates gives an idea of sectoral error. This procedure was followed for all sectors where two independent estimates were available.

(iv) The estimate of net value in a sector may be regarded as a function of a number of variables. Thus, the net value of agriculture depends among other things on the production of bajra, seed requirement of ragi, cost of repairs of agricultural implements, price of wheat in Madhya Pradesh, etc. For a large number of the variables we have to use the figures given by official sources. Here one can form an approximate idea of the error involved from our knowledge of the source material and also of the quality of the reporting agency. But for a number of items, we may have some discretionary latitude. Thus we can adopt one or other of two figures for depreciation. Or, for example, we can adopt different rates of deduction for seed requirement. It is possible to segregate all the items of the type in which discretion has its play. We next use different figures for a particular item and watch the effect on the aggregate net value. Usually, even where the largest variation

is assumed in the most important single constituent, the percentage change in the aggregate is small. However, when all constituents vary and assumed variations are all in the same direction, there can be an appreciable percentage change in the aggregate. By assigning the maximum variation (within reason) to all constituents we arrive at the largest margin of uncertainty of the aggregate net value. To the margins thus obtained can be added the errors ascribed to that part of the estimates over which we have no discretionary control; this part of the error is necessarily subjective. The method outlined above has been used to estimate the margins of uncertainty of sectors like agriculture, animal husbandry, etc.

(v) Where completely independent State estimates are available (*e.g.*, for Bombay), the NIC estimates are split up and rough estimates are arrived at for the States. The difference between the NIC and the State estimates gives an idea of the margin or error involved in our computation.

A2.3. Making use of the methods indicated in the previous section we have the following margins of uncertainty for our sector estimates relating to 1948-49.

TABLE A2.1: SECTOR MARGINS OF ERROR: 1948-49

	per cent
1. agriculture, animal husbandry and ancillary activities	20.0
2. forestry	25.0
3. fishery	25.0
4. mining	10.0
5. factory establishments	10.0
6. small enterprises	33.3
7. communications (post, telegraph and telephone)	10.0
8. railways	10.0
9. organised banking and insurance	10.0
10. other commerce and transport	33.3
11. professions and liberal arts	33.3
12. government services (administration)	10.0
13. domestic service	33.3
14. house property	33.3

A2.4 The above margins of error are then combined (on the assumption of complete independence of the errors of the sector estimates) leading to an overall percentage of about 10 for the aggregate domestic product. A positive correlation between sector errors, if any, may however, increase the margin of error of the aggregate.

APPENDIX THREE

COMPARISON OF THE PRESENT ESTIMATES FOR 1948-49 WITH THE ESTIMATES GIVEN IN THE FIRST REPORT

A3.1. The estimates for 1948-49 given in this Report are different from the estimates for the same year given in our First Report. Broadly, there are two reasons for this. Firstly, a considerable body of new data have become available to us since the publication of the First Report. We have also made a fuller use of the material which existed even at the time of our First Report. Thus, the estimates now have a larger and more satisfactory empirical basis. The most important body of fresh data made use of pertain to the 1951 population census. Secondly, there have been, on reconsideration, changes in some underlying concepts used which in turn have led to some changes in the estimates. Thus, for example, land revenue has now been treated as a direct tax.

A3.2. We present below the two sets of estimates side by side, these indicate that the end results are not widely different in spite of a considerable change in the empirical base and also some change in the underlying concepts used.

TABLE A3·1: NATIONAL INCOME BY INDUSTRIAL ORIGIN FOR 1948-49 AS GIVEN IN THE FIRST REPORT AND IN THE FINAL REPORT.*

items	net output	
	First Report	Final Report
(1)	(2)	(3)
agriculture		
1. agriculture, animal husbandry and ancillary activities	40.7	41.6
2. forestry	0.6	0.6
3. fishery	0.2	0.3
4. total of agriculture	41.5	42.5
mining, manufacturing and hand-trades		
5. mining	0.6	0.6
6. factory establishments . . .	5.8	5.5
7. small enterprises.	8.6	8.7
8. total of mining, manufacturing and hand-trades	15.0	14.8

*In Rs. abja, abja=100 crores=10^9.

is assumed in the most important single constituent, the percentage change in the aggregate is small. However, when all constituents vary and assumed variations are all in the same direction, there can be an appreciable percentage change in the aggregate. By assigning the maximum variation (within reason) to all constituents we arrive at the largest margin of uncertainty of the aggregate net value. To the margins thus obtained can be added the errors ascribed to that part of the estimates over which we have no discretionary control; this part of the error is necessarily subjective. The method outlined above has been used to estimate the margins of uncertainty of sectors like agriculture, animal husbandry, etc.

(v) Where completely independent State estimates are available (*e.g.*, for Bombay), the NIC estimates are split up and rough estimates are arrived at for the States. The difference between the NIC and the State estimates gives an idea of the margin or error involved in our computation.

A2.3. Making use of the methods indicated in the previous section we have the following margins of uncertainty for our sector estimates relating to 1948-49.

TABLE A2.1 : SECTOR MARGINS OF ERROR : 1948-49

	per cent
1. agriculture, animal husbandry and ancillary activities	20.0
2. forestry	25.0
3. fishery	25.0
4. mining	10.0
5. factory establishments	10.0
6. small enterprises	33.3
7. communications (post, telegraph and telephone)	10.0
8. railways	10.0
9. organised banking and insurance	10.0
10. other commerce and transport	33.3
11. professions and liberal arts	33.3
12. government services (administration)	10.0
13. domestic service	33.3
14. house property	33.3

A2.4. The above margins of error are then combined (on the assumption of complete independence of the errors of the sector estimates) leading to an overall percentage of about 10 for the aggregate domestic product. A positive correlation between sector errors, if any, may however, increase the margin of error of the aggregate.

APPENDIX THREE

COMPARISON OF THE PRESENT ESTIMATES FOR 1948-49 WITH THE ESTIMATES GIVEN IN THE FIRST REPORT

A3.1. The estimates for 1948-49 given in this Report are different from the estimates for the same year given in our First Report. Broadly, there are two reasons for this. Firstly, a considerable body of new data have become available to us since the publication of the First Report. We have also made a fuller use of the material which existed even at the time of our First Report. Thus, the estimates now have a larger and more satisfactory empirical basis. The most important body of fresh data made use of pertain to the 1951 population census. Secondly, there have been, on reconsideration, changes in some underlying concepts used which in turn have led to some changes in the estimates. Thus, for example, land revenue has now been treated as a direct tax.

A3.2. We present below the two sets of estimates side by side, these indicate that the end results are not widely different in spite of a considerable change in the empirical base and also some change in the underlying concepts used.

TABLE A3·1: NATIONAL INCOME BY INDUSTRIAL ORIGIN FOR 1948-49 AS GIVEN IN THE FIRST REPORT AND IN THE FINAL REPORT.*

items	net output	
	First Report	Final Report
(1)	(2)	(3)
agriculture		
1. agriculture, animal husbandry and ancillary activities	40.7	41.6
2. forestry	0.6	0.6
3. fishery	0.2	0.3
4. total of agriculture	41.5	42.5
mining, manufacturing and hand-trades		
5. mining	0.6	0.6
6. factory establishments	5.8	5.5
7. small enterprises.	8.6	8.7
8. total of mining, manufacturing and hand-trades	15.0	14.8

*In Rs. abja, abja=100 crores=10^9.

375 M. of Fin.

items	net output	
	First Report	Final Report
(1)	(2)	(3)
commerce, transport and communication		
9. communications (post, telegraph and telephone)	0.3	0.3
10. railways	2.0	1.7
11. organised banking and insurance . .	0.5	0.5
12. other commerce and transport . .	14.2	13.5
13. total of commerce, transport and communications	17.0	16.0
other services		
14. professions and liberal arts . . .	3.2	4.3
15. government services (administration) .	4.6	4.0
16. domestic service	1.5	1.2
17. house property	4.5	3.9
18. total of other services	13.8	13.4
19. net domestic product at factor cost .	87.3	86.7
20. net earned income from abroad . .	—0.2	—0.2
21. net national output at factor cost = national income.	87.1	86.5

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A sectorwise calssification of the serial numbers in the alphabetical list

(Figures with asterisk stand for sources used for reference only)

I *Agriculture, animal husbandry and ancillary activities:*

1*, 4, 7, 18, 19, 22*, 24—26, 33*, 34*, 35, 57—60, 63—66, 67*, 68*, 70, 71*, 73—79, 80. 5—12, 80. 14, 80. 16, 84*, 85, 89* 90, 93, 95—99, 101—104, 106, 108—124, 130, 131,134—168, 169*—171*, 173—177, 179, 181, 183, 185*, 187, 188 190, 192, 193, 195—199, 210, 211, 215—218, 220, 223—225, 236, 238, 239, 241, 242, 244*—246*, 250, 251, 261, 277, 290*—292*, 295*, 296, 297*, 298, 299. 1—10, 299. 12—33, 300, 301, 303*—305*, 311, 312, 316, 318—325, 327, 330, 332—335, 337—342, 344, 346*, 348—350, 352, 354, 357, 360—362, 364, 367*, 369, 371, 372

II. *Forestry* :

55*, 107, 175*, 186, 203*, 364

III. *Fishery* :

25, 72*, 276, 288*, 299.11, 300*.

IV. *Mining* :

4, 31, 53*, 191*, 213.12, 213.15, 213. 17, 213. 18, 253*, 256, 332.

V. *Factory establishments:*

17, 32* 70, 180*, 189, 195*, 208, 213 3*, 213.5*, 213.7*, 213.8*, 213.10*, 213.11*, 213.13* 213.14* 213.16*, 213.18*, 213.20*, 213.26* 213.29*—31*, 213.33*, 226, 248, 249, 256, 275, 279, 311*, 317, 345, 359, 364.

VI. *Small enterprises* :

2*, 27, 33*, 62, 70*, 75, 80, 86-88, 91, 92, 176, 178, 180*, 182, 184*, 189, 193* 194*, 205, 207, 209, 212-214, 219*, 221, 222, 234*, 235, 243, 258—260, 262, 263, 267*, 268, 269*, 273, 274, 280, 282, 286, 294*, 300*, 302, 306, 312—315, 327, 347, 351—354, 359, 362, 366*, 369, 373.

VII. *Communications* :

6, 110, 120—124, 129, 134, 136, 149, 154, 159, 162, 283, 308.

VIII. *Railways* :

9, 10, 15, 110, 111, 122-126, 128, 132, 133, 136, 149, 154, 159, 162, 213.19* 255.

IX. *Organised banking and insurance*:

30, 52, 54, 293*, 309*, 332, 336, 343, 358.

X. *Other commerce and transport* :

2—5, 18, 20, 21, 23, 24, 28, 29, 47—50, 62*, 73* 80, 94, 105, 176, 187, 189, 224, 213.3—5, 213.7, 213. 9*, 213.11, 213. 13, 213. 16, 213. 20-22, 213.24, 213. 28, 213. 31, 213. 32, 222, 231, 233, 235, 254, 257, 268, 270—273, 275, 277, 279, 284*, 287, 289, 299—302, 307, 309, 314, 326, 332, 336, 346, 352, 354, 355, 356*, 357, 359, 362, 365, 367*.

XI. *Professions and liberal arts* :

28, 29, 61, 65*, 69, 80, 83, 100, 103, 189, 212, 213.1, 213. 3—5, 213. 7, 213.8, 213.10, 213.11, 213. 13, 213. 14, 213. 16, 213. 18, 213. 24, 213 27, 213. 29, 213.33, 222, 235, 278, 285*, 302, 326, 328, 352, 354.

XII. *Government services (administration)* :

8-16, 38—46, 51*, 108—124, 127, 130, 131, 134—168, 213. 24*, 281, 332.

XIII. *Domestic service* :

80, 178, 189, 207, 213.1, 213.3, 213.4, 213.7, 213.8, 213.10, 213.11 213.13, 213.14, 213. 17, 213. 23, 213.24, 213.27, 213.29, 213.32, 213.33, 235, 264*, 281*, 287—289, 302, 352, 354, 366*.

XIV. *House property* :

18, 22, 80.1—4, 80.12, 80.13. 206, 265*, 266, 281, 288, 300*, 310*, 332, 362, 370.

XV. *Balance of payments and net income from abroad* :

3*, 4*, 56*, 81*, 200—202, 237*, 240*. 252*.

XVI. *Working population* :

6, 80, 82*, 172, 178*, 179, 193, 197, 222, 232, 247, 255, 275*, 308, 332, 359, 364, 373.

General reference :

36, 37, 227—230, 329, 331, 363, 368.

GLOSSARY OF ABBREVIATIONS

AgSt	Agricultural Statistics of India
ASI	Agricultural Situation in India
CBR	Central Board of Revenue
CIF	Chief Inspector of Factories
CIM	Chief Inspector of Mines
CM	Census of Manufactures
CPWD	Central Public Works Department
CSO	Central Statistical Organisation
DESAg	Directorate of Economics and Statistics, Ministry of Food and Agriculture
DGCIS	Department of Commercial Intelligence and Statistics
DIS	Directorate of Industrial Statistics
DMI	Directorate of Marketing and Inspection
EACom	Economic Adviser—Ministry of Commerce and Industry
ECD	Exchange Control Department—Reserve Bank of India
GSI	Geological Survey of India
IARI	Indian Agricultural Research Institute—Pusa
IBM	Indian Bureau of Mines
ICAR	Indian Council of Agricultural Research
ICEC	Indian Census Economic Classification Scheme, 1951 Census
ILG	Indian Labour Gazette
ILYb	Indian Labour Year Book
ISI	Indian Statistical Institute—Calcutta
LB	Labour Bureau
LC	Livestock Census
LS	Livestock Statistics
mimeo	mimeographed
MR	Marketing Report
NIC	National Income Committee
NIU	National Income Unit
NSS	National Sample Survey
PBEI	Punjab Board of Economic Inquiry
PEPSU	Patiala and East Punjab States Union
PWD	Public Works Department
RBI	Reserve Bank of India
SA	Statistical Abstract
SSMI	Sample Survey of Manufacturing Industries
unpub.	unpublished

AREA AND POPULATION OF THE INDIAN UNION

(1)	area (square miles) (2)	population—1951 census (thousands) (3)
INDIAN UNION*	12,69,640	3,61,239
class A States		
Assam	85,012	9,044
Bihar	70,330	40,226
Bombay	1,11,434	35,956
Madhya Pradesh	1,30,272	21,248
Madras	1,27,790	57,016
Orissa	60,136	14,646
Punjab	37,378	12,641
Uttar Pradesh	1,13,409	63,216
West Bengal	30,775	24,810
class B States		
Hyderabad	82,168	18,655
Jammu and Kashmir	92,780	4,410
Madhya Bharat	46,478	7,954
Mysore	29,489	9,075
PEPSU	10,078	3,494
Rajasthan	1,30,207	15,291
Saurashtra	21,451	4,137
Travancore-Cochin	9,144	9,280
class C States		
Ajmer	2,417	693
Bhopal	6,878	836
Bilaspur	453	126
Coorg	1,586	229
Delhi	578	1,744
Himachal Pradesh	10,451	983
Kutch	16,724	568
Manipur	8,628	578
Tripura	4,032	639
Vindhya Pradesh	23,603	3,575
class D States		
Andaman and Nicobar Islands	3,215	31
other States		
Sikkim	2,744	138

*Excluding tribal areas of Assam.

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